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ROAD WEARY?

IT road warriors share tips on coping with and making the best of travel. Page 53



ELLEN RICHOTT



TRUSTING THE NET

Software and hardware for the Internet
By Alan R. Miller, Computerworld Staff Writer
Illustration by Steve Kapp, Creative Director

COMPUTERWORLD THIS WEEK

MAY 3, 1999

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I WANT
PEOPLE TO
WORK ON MY
FIXES
RATHER
THAN [BE]
PREPARING
FOR
LITIGATION.

LISA HENGER, IS MANAGER, FALCON
PLASTICS, ON WHY SHE SUPPORTS
PROPOSED Y2K LEGISLATION THAT
WORLD SET A 90-DAY "CROLLING OFF"
PERIOD BEFORE LITIGATION CAN
COMMENCE. SEE PAGE 38.

AT DEADLINE EDS Lays Off 5,200

Information technology services giant Electronic Data Systems Corp. in Plano, Texas, has cut 5,200 jobs, or about 4% of its workforce, and posted a loss of \$20.5 million for the first quarter. The jobs were technical and administrative, a company spokesman said. The company blamed with U.S. sales and restructuring costs for the shortfall. It suggested more cost cuts are coming.

'Y2K Act' Vote Up in Air

Senate Majority Leader Trent Lott (R-Miss.) last Thursday cast doubt on bringing the "Y2K Act" to a full year 2000 liability measure to a full vote because Senate Democrats keep trying to attach undefined measures to it, such as gun control and a minimum-wage measure. But some Republicans said there's still hope for the bill, which includes a bipartisan compromise to drop liability provisions for corporate directors. Democrats won more corporate protections and eliminated many caps on punitive damages in the compromise. (See story, page 26.)

Privacy Hole Revealed

The Daja News Internet search engine recorded users' e-mail traffic status last year without their permission, reported Richard M. Smith, president of Pier Lap Software Inc. in Cambridge, Mass. Smith said the service also monitors users' clicks on external Web pages links in a newsgroup message. A spokesman for Daja News said on Friday that the New York company would stop collecting e-mail information, adding, "We have never used this information to track back clicks to individual users."

Short Takes

PLATINUM SOFTWARE CORP. this week plans to change its name to EPICOR SOFTWARE CORP., following up a commitment that settled a lawsuit with PLATINUM TECHNOLOGY INC. . . . In a deposition Friday in the MICROSOFT CORP. antitrust trial, lawyers for SUN MICROSYSTEMS INC. acted to close Chief Operating Officer Michael Papay's testimony about the America Online Inc.-Netscape merger. Sun has a stake in the merger.

EUROPEAN USERS TAKE ON JAVA FOR BIG JOBS

IT shops abroad behind U.S., but business deployments are on rise

BY CAROL SLIWA
PARIS

BANQUE GENERAL du Luxembourg is doing something that many U.S. companies still might be hesitant to try: an enterprise-wide application built by 70 developers, that relies on a million lines of Java code for a key business function.

Historically conservative, European companies have been slow to deploy Java applications for a variety of reasons. But a growing number are starting to take the Sun Microsystems Inc.-created language seriously enough to forge ahead with business-critical applications that rival those of U.S.-based companies.

Developers won more corporate protections and eliminated many caps on punitive damages in the compromise. (See story, page 26.)

Popular Format

In fact, Gartner Group Inc. predicted that Java won't be marginalized by Microsoft and will become the most popular language and platform technology for network computing applications by 2004. In a presentation at the Java Enterprise Solutions Symposium here, Gartner estimated that worldwide Java adoption is 20% to 40% slower than in the U.S.

Java "is transitioning to the norm rather than the exception in the U.S. Here [in Europe], it's still the exception. But those exceptions . . . are no less advanced than the U.S." said Daryl Plummer, an analyst at Stamford, Conn.-based Gartner Group.

At the Luxembourg bank, employees had to go to a different 3200 test-based screen for each of its roughly 20 mainframe applications. Customers who had savings accounts, loans and an investment portfolio had to wait for a bank employee to switch among the different applications.

With help from Andersen

Consulting, the bank spent two years overhauling its mainframe-based architecture. It wrote custom code in both Java and Cobol to build a Java component-based system to inter-

view Banque General du Luxembourg can now focus on training workers to sell its products, said Marc Aguirre, technology director.

The Java component archi-

Java Developer Growth Overseas

Registered Java application developers in Europe, the Middle East and Asia:

DATE	ME. MIL. DEVELOPERS
7/98	111,381
10/98	151,006
1/99	201,667
4/99	254,821*

*As of April 1, 1999

grate information and transaction interfaces from the various legacy databases.

Employees at the bank's 42 branches got an easier-to-use screen that can incorporate graphs, video, audio — even worldwide stock quotes — in

lecture also will make it easier to create an Internet banking site by year's end because developers will be able to reuse much of the code.

Like their U.S. counterparts, European developers said they find Java easier to work with

Exchange to Rely on Win2K Active Directory

Other 'Platinum' apps to leverage key facet of OS

BY SHARON GAUDIN

The popular Exchange e-mail server software will be the first of Microsoft Corp.'s applications to be optimized for the upcoming Windows 2000 operating system. Microsoft formally shipped Beta 3 of Windows 2000 last week.

The next upgrade to Microsoft Exchange, code-named Exchange Platinum, will depend on the Active Directory services inside Windows 2000. It won't be able to run with any other operating system — including Microsoft's own Windows NT 4.0.

Active Directory replaces the Registry in Windows NT 4.0. The directory is like an

electronic Yellow Pages that lists objects, files, devices and users running or located on the network. It provides a way to find the pieces of the network and better manage or communicate with them.

John Scancello, director of information technology planning at Consolidated Edison Company of New York Inc., said he's eager for a version of Exchange that uses Active Directory.

Great Idea?

"If it works, it will be a great idea," Scancello said. "For the first time, we'll have one central repository of directory types of information. It should be a much more standard way of doing things."

A Microsoft spokesman said that although other Microsoft products, including pieces of the BackOffice Suite, will join the Platinum family, they will

than other object-oriented languages, which speeds development time.

They also like its platform independence and object-oriented model for connecting to legacy systems.

Those that have resisted Java bemoan its performance, are reluctant to rewrite existing legacy-based applications, or claimed that they have trouble finding qualified application developers.

International broker Prebon Yamane Inc. chose Java to help build an extranet that will let it push prices — at the rate of hundreds per second — to the investment banks that buy and sell money through them. The London-based brokerage had been using an expensive, proprietary network to deal with its top customers.

On the server side, Java kept the company in sync with its vendor and client partners, said Patrick McGrath, information technology director for Prebon Yamane's operations in Europe, the Middle East and Africa. ■

only take advantage of Active Directory — not depend on it like Exchange.

That means future upgrades of these other products should also run on other versions of the Windows platform.

Doug Strumberger, an Exchange product manager, explained that Exchange Platinum will use Active Directory instead of having a directory of its own. "Administrators will create a single enterprise directory that covers both networking access and security, and messaging access and security," he said. "We'll be able to administer that directory as a single, unified world."

There is no release date for either a beta version of Exchange Platinum or the final release. "We are shooting for . . . as soon after Windows 2000 ships as possible," Strumberger said. ■



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AMAZON HINTS AT DATA SALES

Online bookseller's losses grow, but moves suggest plan to sell shopping-behavior info

BY STEWART DICK

SELLING MORE books and CDs hasn't stopped Amazon.com Inc.'s losses, so the electronic retailer might be positioning itself to become a dominant provider of online shopping-behavior data, industry watchers said.

Financial results released last week show continued sales growth — and mounting losses. The company also acquired the following three companies, two of which should bolster its ability to gather online consumer shopping data:

■ San Francisco-based Alexa

Internet, a browser add-on service that offers Web surfers information about the pages they're visiting and suggests related sites.

■ Redwood City, Calif.-based Accept.com Inc., a company that develops online transaction technology.

■ Sandwich, Mass.-based Exchange.com, an online used and antiquarian-book dealer that operates rare book and music Web sites at www.booksfind.com and www.musicfile.com, respectively.

The purchase prices totaled approximately \$645 million.

In the quarter ended March

31, Amazon.com counted net sales of \$293.6 million, a 236% increase from the same quarter last year, before music and video sales were added to the site. It posted a loss of \$61 million, compared with a \$10.36 million loss a year earlier.

Jim Balderston, an analyst at Zona Research Inc. in Redwood City, said the combination of acquisitions and losses offer hints about where Amazon is likely headed. "It's all related to gathering lots of information about customers," he said. "Amazon may lose money gathering consumer data, but they could make a hell of a lot selling data about online shopping behavior."

Scott Appleby, an analyst at ABN Amro Inc. in New York, agreed that Amazon is trans-

forming itself from a simple product merchant to an information merchant. "It's a logical step for them," Appleby said. Even if consumers balk at having individual information released, Amazon's aggregate shopping behavior data would still be quite valuable, he added.

Amazon, which didn't return calls last week seeking comment, has more than 8.4 million registered users. Information about them could be combined with customer data from two sites — drugstore.com and www.com — in which it has invested.

Amazon's privacy policy states that it does "not sell, trade or rent personal information to others," but notes it "may choose to do so in the future with trustworthy third parties" while allowing users to decline to have any of their personal information distributed.

JUST THE FACTS Appendices For Amazon

A sampling of Amazon.com's nonbook holdings:

Accept.com Inc.: E-commerce online transaction technology

Alexa Internet: Web browser add-on that provides information about visited sites

Internet Movie Database: Online movie compendium

Playsoft: Web-based address book, calendar and reminder service

Amazon.com Auctions: Online auction house

"The real business [for Amazon] is gathering information," Balderston explained. "They could quickly and easily leverage what they're doing now to become a market leader in online shopping profiles." ■

Toys R Us Online Plan May Undermine Storefront Sales

Without differentiation, retailer faces friction between Web, real-world stores

BY STACY COLLETT

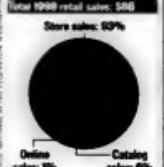
The \$80 million plan to invade the online toy market announced last week by Toys R Us Inc. promises to give its smaller online competitors a run for their money.

But industry observers said the plan will further erode the retailer's brick-and-mortar business and create friction between its online and storefront entities.

Paramus, N.J.-based Toys R Us announced last week that it has made Toystrus.com a separate subsidiary based in California's Silicon Valley, that it acquired a 500,000-square-foot distribution center in Memphis and that it forged a strategic partnership with venture capital firm Benchmark Capital in Menlo Park, Calif. Benchmark will invest more than \$10 million in the site.

Analysts said the plan is undeveloped. Toys R Us officials were unavailable for comment.

Online Sales
Web selling still makes up a small piece of the retail pie.
Total 1994 retail sales: \$366 billion



In a statement, officials said the new site, which will be launched in this year's second quarter, "will offer numerous customer-focused enhancements."

"They must find some package of services that is better than what's in the store," said Bill Hanke, president of Martec International Inc., a re-

tail consultancy in Atlanta. Providing product information online can encourage customers to make immediate purchases at the store, he said.

The \$1.2 billion retailer fell to No. 2 in the toy-selling market behind Wal-Mart Stores Inc. last year, posting a net loss of \$132 million. It also is feeling the heat from small-but-powerful online retailers like eToys Inc., which scored \$239 million in sales last year.

"It's a two-edged sword," said Chandra Mui, author of the e-commerce guide, *Unleashing the Killer App*. "The market share for their stores is going to go down because competitors like eToys will take away shares, or they'll take it away themselves. The physical stores are in trouble either way."

Toystrus.com must grow separately from the rest of the company while maintaining its brand name and market-leader status, as have the Web-based divisions of Charles Schwab & Co. and Barnes & Noble Inc., analysts said.

Mui said Toy R Us is putting its brick-and-mortar stores against the online business. "At some point, the people at the stores will say, 'Why are you taking business away? More big companies are getting out of their way [online],' " he said. ■

Ford Will Use Net To Sell Used Parts

BY BOB WALLACE

Ford Motor Co. plans to use the Internet to rev up its entry in the lucrative market for used car parts. Company officials last week estimated the overall vehicle recycling effort could eventually generate \$1 billion in new revenue while also cutting costs.

The new Ford unit's plan is to provide a way to sell used parts from junkyards principally to body shops, insurance companies and retailers. It will also recycle materials such as metal and plastics to save on making new parts.

Ford is the first of the major automakers to announce plans to use the Internet to drive into this market, although archival General Motors Corp. is considering it, said Ken Meeks, an analyst at A.T. Kearney Inc., an auto-industry consultancy in Southfield, Mich.

"I see that as Ford looking at an opportunity and realizing the Internet is a wonderful tool to put customers together with the products they're looking for," said Chris Denove, an analyst at J.D. Power and Associates.

ates in Troy, Mich. The plan is the latest of several key Ford business efforts enabled by the Internet. The automaker is prepping a Web-based car shopping service, moving its worldwide vehicle design effort to a virtual private network and using the Net for procuring non-production items.

Ford hasn't yet said when it will begin selling used parts over the Internet and claims that it hasn't set its informational technology strategy for supporting the undertaking. However, e-commerce experts said the \$100,000 to \$1 million needed for the online effort is a small price to pay, considering Ford's expected revenue.

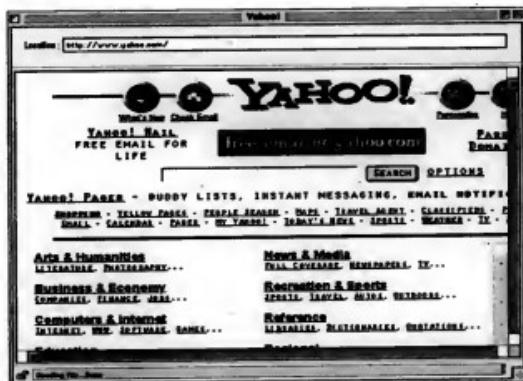
"They first have to decide if they want to build the systems, buy off-the-shelf packages or partner with someone," said David Baltz, an analyst at Current Analysis Inc., in Sterling, Va.

Ford must also decide if it will support the used parts sales effort over a stand-alone Web site and whether it will link it to the automaker's other sites, said Dennis Driscoll, an analyst at Extraprise Group, a Boston consultancy.

Ford took the first step in March by purchasing an automotive recycling company in Florida. According to a Ford statement, the automaker "plans to expand its presence substantially in the coming months." ■

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BRIEFS

Lotus Backs Top Exec Accused of Lying

Lotus Development Corp. is supporting its president, Jeffrey Papson, after a critical April 29 story in *The Wall Street Journal*. The article, which quotes customers, military officials and former colleagues, contended that Papson has lied about his personal history and embellished his military record when talking to business prospects.

"No one should expect to see any changes here, and our point of view is that the story is largely concocted of rumor and commentary on rumors," said Bryan Siemsen, a Lotus spokesman.

Microsoft Unveils Four Support Plans

Microsoft Corp. has unveiled a slate of support programs that the company said was tailored to four customer categories: users of mission-critical enterprise applications who need on-site support and 24-hour telephone help; enterprise customers who need Microsoft to manage systems support; system administrators who need access to technical information and support staff; and consumers and home users who need online and over-the-phone information.

Short Takes

MICROSOFT has pledged research plus \$1 million in grants and services to the consortium developing the Internet2 backbone (see related story, page 30). . . . Former **NETSCAPE COMMUNICATIONS CORP.** CEO James Barksdale has stepped down from the federal Internet Tax Freedom Commission, making way for a local consultancy representative. . . . **NETWORK COMPUTING DEVICES INC.** saw quarterly earnings decline from \$30.8 million to \$26.4 million since last year — and its loss jump from \$480,000 to \$2 million — because of substantial declines in network-computer sales. . . . **CISCO SYSTEMS INC.** said it would pay \$170 million to buy **Avantech Technologies Inc.**, a Milpitas, Calif., maker of modems to deliver voice mail, e-mail and fax traffic into an IP-based network.

SAP TO OPEN UP R/3 TO THE WEB

Sapphire rollout planned for e-commerce applications, Java user interface, R/3 links

BY CRAIG STEDMAN

SAP R/3 USERS who want to do business online are licking their chops at the back-office software to become more Internet-friendly — and SAP AG is starting to deliver.

At Sapphire '99, its European user conference this week in Nice, France, SAP is expected to announce plans for rolling out a prepackaged set of e-commerce applications, a Java-based user interface that runs in Web browsers and Internet technology for connecting R/3 to the outside world.

The emphasis on the Internet is a promising sign to companies that are looking to use the Web to open up their R/3 systems to customers and distributors.

Interested Party

AlliedSignal Inc.'s diesel-engine turbocharger division in Torrance, Calif., is one. It's among a handful of users that have installed an SAP Internet server that comes with a built-in set of nearly 100 R/3 transactions simplified for end users who haven't had in-depth training on the software.

Getting SAP's Web-enabled transactions ready for 120 U.S. distributors to use took just two to three weeks of work, said Jeff Smith, the division's CIO. "I was thinking this was going to be big and complicated, like everything else in R/3," Smith said. "But it has actually been a pleasant experience."

At Sapphire, Smith plans to meet with European automakers to discuss possible e-commerce links involving R/3. Automakers account for 90% of the division's sales, "and we'd love to have them logging on to the Internet to find out about orders rather than calling us," he said.

Whirlpool Corp. in Benton Harbor, Mich., is also linking R/3 to the Internet to allow retailers that sell its appliances to place orders online. But

senior project manager Bob Briggs said it's not clear if SAP's packaged Web interfaces are up to that task.

"If you use R/3 completely generic, they pretty much have the answer for you," Briggs

AT A GLANCE

SAP R/3 Gets Online

SAP's Web-based applications include these products:

Business-to-Business Procurement: Automates purchase of office supplies and other manufacturing materials (available now)

Internet Application Components: Web-based R/3 transactions designed for customers and other business users who aren't familiar with R/3

SAP Online Store: Catalog for selling products online. Users check product availability and price quoting

SAP Employee Self-Service: Internet application that lets users modify benefits, choices and other personnel records online

said. But Whirlpool plans to mix R/3 with coo-SAP pricing and tax applications that may need custom interfaces.

SAP has quietly developed several e-commerce and intranet applications that are starting to become available (see chart). It also is releasing a Java-based version of R/3's user interface that can be installed on an application server and downloaded in applet form by browser-equipped end users.

Another announcement due at Sapphire is a plan to use Extensible Markup Language technology developed by WebMethods Inc. in Fairfax, Va., to provide Internet links between R/3 systems at different companies, or between R/3 and external Web sites.

SAP has "a lot of the pieces of e-commerce in place," said Josh Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif. "They've been dabbling in this for a while, and they have quite a bit going on."

R/3 user GATX Capital Corp. is looking at tapping into the Internet to send out invita-

Lotus to Link Domino to R/3

In Nica, IBM's Lotus Development Corp. subsidiary plans to announce back-end software for tying its Domino application server to corporate systems, letting end users connect to SAP R/3's client to view users interacting with custom links.

Roger Burns, IBM's Houston-based information technology unit is looking at using the new technology in a Web application for managing customer inventories.

Key Burns, a development manager at the IT unit, said the Lotus-Ibm Sapl Connector would give SAP a mid-time interface between Domino and R/3. That would replace the batch link now in the application, which is being used by Shell Chemical Co.

The mid-time interface would let users automatically generate product shipment orders in R/3 from Domino, Burns said.

— Craig Stedman

es or to build e-commerce applications for businesses such as PC leasing. What SAP delivers will be critical because R/3 "is really our core system," said Derek Williamson, vice president of information services at the San Francisco asset-management firm. ■

Struggling Baan Loses KLM, More Money

Airline pulls out of development project

BY CRAIG STEDMAN

Baan Co. last week suffered two more blows: another quarterly loss and a decision by KLM Royal Dutch Airlines to pull out of a joint software development project.

KLM and Baan were building a new maintenance application that the airline planned to use in servicing its planes.

Baan officials acknowledged that the project, which began early last year, turned out to be more complex than expected and was running behind schedule.

A Baan spokesman said KLM eventually decided it was "too big an effort" to continue with the project. KLM officials in the Netherlands couldn't be

reached for comment.

As part of a settlement, Netherlands-based Baan is paying KLM \$2 million for all rights to the maintenance application. The Dutch vendor plans to continue development on its own and will market the software to other airlines, but it wouldn't disclose a targeted shipment date.

Revenue Dips

Baan's \$19 million first-quarter loss — its third straight deficit — was slightly smaller than Wall Street analysts had predicted. But software license revenue dropped 29% in the quarter to \$652 million, despite the fact that the number of Baan sales nearly doubled

year-to-year.

Application rival PeopleSoft Inc. in Pleasanton, Calif., also reported a big drop in its license revenue two weeks ago. Both vendors now get less than 40% of their total revenues from product sales — a mix "that's not a sustainable business model for a software company," said Steve Bonadio, an analyst at Hurwitz Group Inc. in Framingham, Mass.

Like PeopleSoft, Baan is trying to boost sales by branching out into new applications, such as a line of e-commerce packages that it announced last week (ICW, April 19).

But those products will take at least six months to kick in, Bonadio said. "This won't be the last struggling quarter for Baan," he said. "It's still trying to pull back from the brink." ■



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Propelling the next E. E-services.



Experts Ponder Remedies If Microsoft Loses Antitrust Case

By PATRICK THIBODEAU

WASHINGTON

Microsoft Corp. continued its antitrust fight last week by de-

posing key figures involved in America Online Inc.'s Netscape merger. But several antitrust experts and industry

groups on both sides of the case said a verdict against the company seems likely, and attention is shifting to remedies.

But what remedies? Most experts seem to agree that anything less than the breakup of the company or forced licens-

ing of its Windows source code won't restore competition.

"What the government needs to do is get a powerful enough remedy to kick-start the market," said Steven Solop, a law professor at Georgetown University in Washington, at a conference here last Friday organized by consumer advocate Ralph Nader.

"Conduct" remedies would require long-term government oversight, and they won't remove the company's incentive to reconsolidate its power, said Glenn Manishin, a Washington-based attorney. He prepared a Software Information Industry Association paper recommending the creation of "Baby Bills" — smaller companies that would result from the Microsoft breakup.

Breaking Up Hard To Do

But Stan Lebowitz, a professor at the University of Texas in Dallas, said a company breakup or forced source-code licensing would raise user costs. Software developers would have to spend more on research and development, as well as support, to develop applications that work with different Windows operating systems. He said he believes Microsoft is being punished for its success.

The Microsoft case, expected to resume in two weeks, has been in recess since the end of February, after both sides concluded their cases.

In the interim, Microsoft has been attempting to show that AOL's \$4.2 billion acquisition of Netscape Communications Corp. was deliberately delayed so as not to hurt the government's antitrust case.

Last week, Microsoft attorney Michael Lacovara questioned Peter Currie, the former chief financial officer at Netscape and the first of several executives who played key roles in the merger to be deposed. And Friday, Microsoft began its deposition of Michael Popov, a vice president at Sun Microsystems Inc., which acquired some of Netscape's technology. AOL CEO Steve Case is expected to be deposed this week.

AOL/Netscape merger talks began in late August and were moving rapidly by September, Currie testified. But talks soon took a hiatus that lasted until mid-November. AOL unveiled the merger on Nov. 23.

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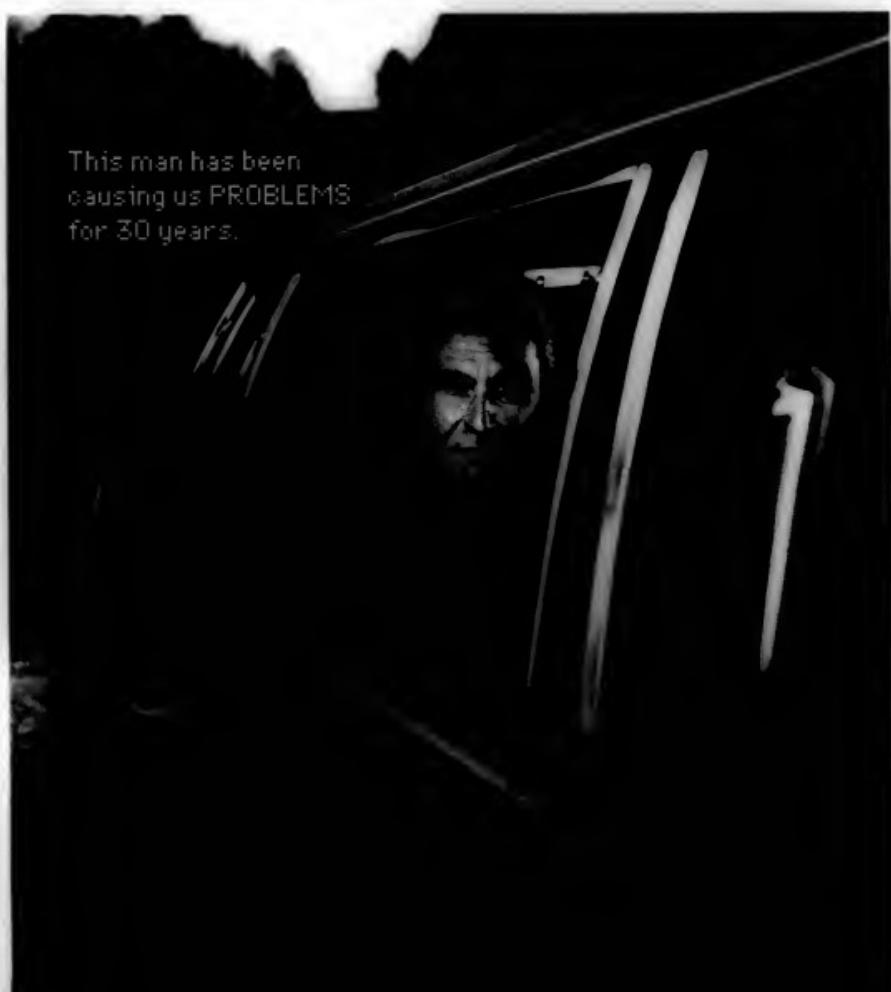
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Bull

HANDHELDS GET NETWORK CARDS, FASTER DATA ACCESS

Xircom's new CompactCard first to ship, competitive offerings said close behind

BY MATT HAMBLIN

INFORMATION technology manager John Freeman hopes a network interface card for handhelds being announced today will help physicians at Intermountain Health Care Inc. lighten their loads and connect them to patient data 10 times faster.

Currently, about 80 doctors carry laptop computers weighing several pounds each from room to room, connecting through a wireless LAN running at about 11M bit/sec., he said. But the Salt Lake City health care organization is on the list to have doctors beta-test the new CompactCard Ethernet 10 from Xircom Inc.

In Thousand Oaks, Calif. It fits inside Windows CE handheld devices and connects through a wired dongle to an Ethernet LAN at speeds of up to 10M bit/sec. Doctors would have to plug the connector in to a connection in each room, but Freeman said he thinks they might like the faster network speeds and the instant-on feature.

Analysts described the Xircom card as the first of its kind but said competitor 3Com Corp. won't be far behind with a similar offering to fit the

CompactFlash ports that come standard in most handheld CE models.

Analyst Fran Firth at Cahners In-Stat Group in Newton, Mass., said the CompactCard will help advance the use of less-expensive handhelds, especially in situations such as health care. If the doctors like the change, they would have handheld computers weighing only 1 to 2 pounds, connecting at faster data rates and at a lower overall cost. Freeman is investigating CE devices from NEC Corp. that have keyboards and sell for about \$800. That's well

below the \$2,800 for the Dell Computer Corp. laptops doctors now use; wireless LAN cards cost an extra \$400.

By comparison, the CompactCards are "fairly inexpensive" at \$49, Freeman said.

The next step for Xircom will be to equip the CompactCard with wireless capability, something analysts expect next year.

A key feature of the new CompactCard is its ability to conserve power consumption, said Jack Gold at Meta Group Inc. in Westboro, Mass. When not in use, the card automatically shuts off to save battery life.

Analysts said the installed base of Windows CE machines is currently about 1 million in the U.S. but will grow depending on connection options, including wireless. ■

HotSpot Java Machine Finally Debuts, but Users Question Sun's Performance Claims

System gets limited vendor licensing

BY CAROL SLIWA
PARIS

Sun Microsystems Inc. finally ended a two-year wait for its HotSpot Java virtual machine last week at the Java Enterprise Solutions Symposium here.

Sun launched the technology with claims that it can make Java applications run twice as fast. But potential users need to be cautious, observers warned.

"Until you test it with your own applications, no numbers mean anything," said Jeffry Borrer, director of information technology at Daiwa Securities America Inc. One HotSpot endorser touted by Sun — Kaviz Solutions Inc. in Boston — claimed performance improvements of 2.8 times in its software tool, which is used to help predict Web visitors' behavior based on their usage history. The 3-year-old company, however, admittedly doesn't have a substantial customer base yet.

For Hewlett-Packard Co. HotSpot "ensures a significant boost in server-side Java technology runtime performance," said Patrick Rogers, marketing manager at HP.

But a week ago, HP's enterprise Java program manager,

Susan Henson, indicated that HotSpot hadn't lived up to initial expectations. "We were led to believe that [the performance boost] would be something huge," she said. "We've seen some improvement of 20%, 30%, 40% — which in a Java environment is not to be ignored." Henson said. She added though that it isn't "absolutely astonishing" either, based on Sun's early claims.

And only a handful of vendors — including HP and Sen-

gate Software Inc. — actually had licensed the technology through last week, a Sun executive acknowledged. For its part, Sun reversed direction at the eleventh hour and elected not to charge for the technology, after telling partners and press just a week before that it planned to impose a fee.

Sun also immediately began talking up HotSpot Version 2. A beta version, which promises further performance improvements, is due in July. ■



JEFFRY BORRER of Daiwa Securities is wary of Sun's claims

Sun to Finalize Server-Side Java Specs

BY CAROL SLIWA
PARIS

Sun Microsystems Inc. next month plans to finalize critical components of its Java Enterprise Edition specification, a key step to helping server-side Java vendors make their products work together, a company official disclosed.

The specification — a list of elements that server products need — includes Enterprise JavaBeans, Java Server Pages, Servlets, Java Database Connectivity and Java Transaction Services. It's due at the Java

One conference to San Francisco next month.

A reference implementation that helps ensure that products pass muster and compatibility test suites that make sure products conform to the specification are expected by year's end, said Java platform group manager Gina Centoni.

They will include new test suites for software vendors to ensure compatibility with the Java platform.

At Java One, Sun is also expected to launch Enterprise JavaBeans 2.0, featuring "entity

beans" — components that developers have requested to help them build server-side applications.

Sun's other focus for the rest of the year will be on a Java 2 platform upgrade, code-named Kestrel, that fixes bugs, tunes performance, makes minor optimizations in the virtual machine and changes a few application programming interfaces, Centoni said.

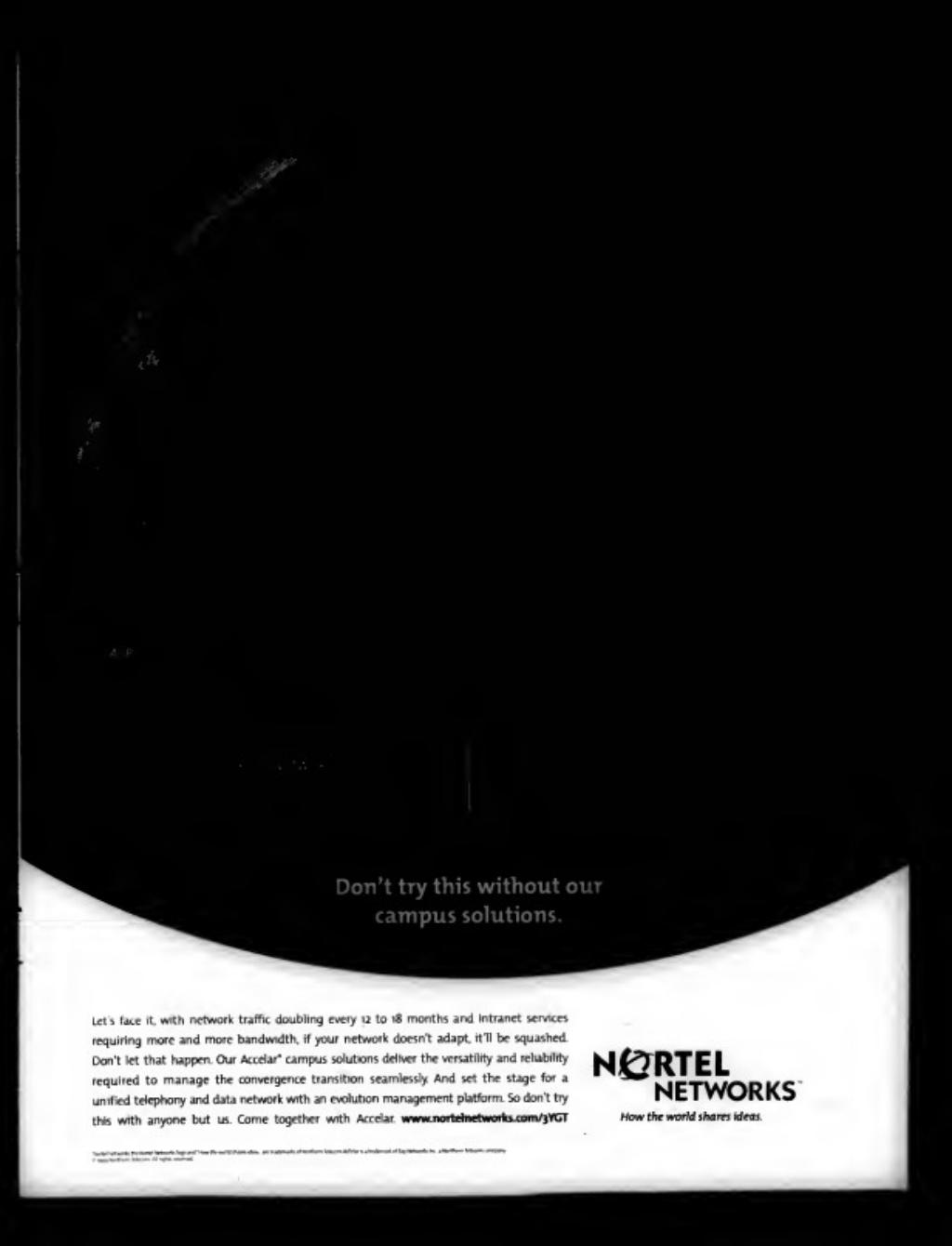
Work isn't expected to start on the next major release of the Java platform until 2000, she said. ■

PC, network computer or kiosk, long as it has a Java-enabled Web browser. A Java network applet — called a Netlet — downloads to the local machine from the server to create a secure pipe. It then funnels requests to the server, a company spokesman said.

Sun's i-Planet software acts as a gateway, handling user login and authentication and providing links to the servers that host applications or store files.

"Instead of having banks of dial-up modems, we would love to be able to use the Internet for access to our private intranet," said Brian Kilcourse, senior vice president of MIS at Longs Drug Stores in Walnut Creek, Calif. But Kilcourse said i-Planet would need to handle security and the emerging IPsec security specification before he would consider it.

To be available next month, i-Planet will cost \$10,000 for a 100-user package. It runs only on Solaris. It can access files or applications running on Solaris, Windows NT, MVS/AS/400 or Unix operating systems. ■



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BRIEFS

Faster Handheld Processor Due

Intel Corp. this week plans to unveil its next-generation StrongARM processor to enable handheld computers and smart phones. The processor is due by June 2000 and should triple the performance and double the battery life of the current StrongARM 1100 processor announced in March. The planned processor will run at 150 MHz using 0.7V and at 600 MHz using 1.2V.

Microsoft Continues E-Commerce Push

Microsoft Corp., which is developing a "one-stop" program to offer software, services and support to implement e-commerce study, last week unveiled an e-commerce alliance with Basen Co., Ernst & Young LLP and J.B. Edwards & Co.

Web Hotel Bookings To Hit \$1 Billion Plus

Internet-based hotel sales will more than double to \$1.1 billion this year and reach almost \$4 billion by 2001, according to a new study by PointCastNet Inc. in Sherman Oaks. In three years, the Net will represent 5.5% of all hotel bookings, the survey predicted.

Short Takes

MCI WORLDCOM INC. has posted \$205 million in net income for the quarter, up from \$100 million for last year's quarter. Revenue was \$3.3 billion, up from \$2.3 billion a year ago. . . . **CONTROL DATA SYSTEMS INC.** will add management of Microsoft Exchange and Novell/Domino messaging networks in its e-mail outsourcing service offerings. . . . **SOFTWARE.COM INC.** last week acquired MOBILITY.NET, a maker of Web-based applications that include e-mail, an address book and task manager. . . . **SOFTWARE PRODUCTIVITY RESEARCH** this week will introduce a Y2K validation service to help companies check whether mission-critical applications will meet the year-end deadline. . . . SAP AG released a preconfigured bundle of its R/3 applications for use by high-tech equipment makers.

RETAILERS FEAR IMPACT OF OTHERS' Y2K WOES

Glitches in the transportation industry could affect delivery of imported goods

BY DAVID GREENSTEIN

US RETAILERS are at the end of a complex, global supply chain whose year 2000 readiness is hard to assess. But if there's a weak Y2K link, it could be in the transportation and shipping of goods to stores.

Retailers are concerned that if some transportation companies experience problems, others won't have enough capacity to handle the extra load. Such a difficult shift occurred during the United Parcel Service of America Inc. employees' strike in 1997.

In an April 16 report on contingency planning, the National Retail Federation's (NRF) Y2K survival committee concluded:

MORE ONLINE

For resources related to IT in the retail industry, visit our Web site: www.computerworld.com/retail.

cluded that competitors of disabled freight companies are likely to apply surcharges to pick up the slack. And in March, a Gartner Group analyst told a U.S. Senate committee that air, ocean and rail shipping companies worldwide are among the relative laggards in Y2K-preparedness.

To investigate the preparedness of shippers, the NRF met in New York recently with two package- and freight-shipping companies, several retailers said. But the shipping representatives offered little useful detail in their presentations and weren't able to answer questions.

The NRF report also laid out dozens of potential crises that could arise if local government or utility systems fail. Several retailers said last week that they don't expect major problems but that they have had to work diligently to write useful compliance information out of

suppliers, shippers, utilities and local governments.

"There is a confident mood among retailers about themselves," said Cathy Hocka, vice president of information technology at the Washington-based NRF. "There is not a confident mood among retailers about others along their very long supply chain."

Importance of Imports

The retail industry is right to take extra precautions, said Jim Duggan, a Gartner Group analyst in Stamford, Conn. "Retailers have a lot of small companies in their supply chain," he said. Many retailers and their suppliers depend on imported goods from nations that may be too far behind in their Y2K work to catch up.

Sometimes frustrated by boilerplate responses from tens of thousands of firms each large retailer must query, retailers have been paying live visits to key suppliers, utilities and government officials.

The results of those face-to-face meetings have generally been comforting. "We're never

going to be 100% comfortable," said Ron Kerr, senior information systems manager at The Home Depot Inc. in Atlanta. But members of the company's Y2K team have quizzed various utility companies with some success. "We're getting good answers, but we've got to do contingency planning," Kerr said.

Not all the news is ominous. Dodgeville, Wis.-based catalog retailer Lands' End Inc., which imports half its merchandise, relies on reports from employees visiting overseas suppliers, as well as reports from Gartner Group. The information the company gathers isn't exhaustive, but "we've been getting more and more comfortable," said year 2000 manager Kurt Van Dynevan, 9.

Sun Redefines Java Standards Bid

Frustated that the International Organization of Standardization (ISO) was creating the Java language's breed and maintenance, Sun Microsystems Inc. said Friday that it has begun looking to other standards bodies.

"It might be [the European Computer Manufacturers Association], or it might still be ISO," said Sun spokesman Darin Hartson. She commented Friday after a conference call with Sun President Alan Renear and George Pauk, vice president of engineering of the JavaSoft division.

Sun has been trying for at least two years to win ISO approval of a Java standard, but it has refused to cede any control of the language. In February, Thomas F. Stach, an analyst at Prudential Securities Inc. in San Francisco, told [TODAY] that Sun's efforts have been "in an open process."

Sun, of course, could decide that a Java standard isn't needed. "I think it is a de facto standard already," said Arnon Ya, a consultant at Prudential Inc. working for MetLife/Montgomery Securities Inc. in San Francisco. "It's so entrenched now that it's not an issue."

—David Greenstein and
Shawn Gauldin

Schwab Improves Its Web-Site Navigation

Changes result from tests with 500-plus users

BY THOMAS HOFFMAN

Charles Schwab & Co. last week enhanced its Web site as part of its continuing effort to become more of a full-service investment bank. Schwab said it expects the new site to dramatically improve navigation and thereby help customers invest more money.

To plan the new features, Schwab conducted six months of Web-site usability tests with more than 500 customers, an unusual move among online trading firms.

The latest developments from San Francisco-based Schwab include several new navigation tools aimed at helping customers make investment decisions. One feature, called QuickLinks, will show

investors how many shares they already own in a particular stock.

Automated Planning

Schwab also added a retirement planner that lets customers calculate the holdings of their non-Schwab retirement accounts along with their Schwab investments to determine if their retirement goals are on track. For example, if a couple is \$400,000 short of their goal, the planner will calculate whether they can make up the difference by working, say, an extra two years or by investing an additional 5% of their salaries.

Improving the user interface is little understood but extremely important in the on-

line channel, said Bill Doyle, an analyst at Forrester Research Inc. in Cambridge, Mass.

"Few [online trading] firms run usability tests, Schwab did, and that's real smart," he said.

That customer-centric approach helps explain why Schwab held a commanding, 27.4% share of the U.S. online trading market as of Dec. 31, 1998, compared with the 12.4% share of its nearest rival, New York-based Waterhouse Securities, according to Credit Suisse First Boston Corp. in San Francisco.

Schwab's customers will have the option of using the original Web site or the new one for an undetermined period of time, depending on customer reaction, said Randy Goldman, a vice president at the company. Both can be accessed at www.schwab.com.

UNIX OR NT?
WEB-ENABLED OR CLIENT/SERVER?
CENTRALIZED OR DISTRIBUTED?

YES.



SEQUENT

Interface to Monitor Apps Proposed

BY DAVID GREENSTEIN

J.P. Morgan & Co. and Computer Associates International Inc. last week proposed an interface that lets administrators monitor applications based on their business impact. They asked The Open Group LLC, a standards organization in Reading, England, to adopt it as a standard.

The proposed application management interface would let developers define which applications systems and data sources are part of a particular business process.

It would also let them present that information to systems management frameworks such as CA's Unicenter TNG. The technological elements could then be ranked and managed based on the processes they support.

Application interfaces are often vague, but the interface from Islandia, N.Y.-based CA and New York-based J.P. Morgan is a good step toward bringing information technology and its business customers closer together, according to Colin Mahon, an analyst at The Yankee Group, a research firm in Boston. ■

BUSINESS BENEFITS SEEN IN INTERNET2

High-quality video, audio links, traffic management all key

BY PATRICK THIBODEAU

WASHINGTON

For James Wall, a researcher at Texas A&M University, Internet2 has already paid off. He saves \$10,000 per hour in satellite link fees to test an intelligent communications manager used in trauma care.

The technology links an ambulance by video to an emergency room so a physician can direct care remotely. If the high-speed satellite link were to fail, an intelligent communications manager would switch seamlessly to a radio or cellular connection, while orderly

JUST THE FACTS

Internet2

■ Internet2 was started in 1996 by 34 research universities. Nearly 150 are members today.

■ Universities want bandwidth-intensive networks for development of telecommunications, digital libraries and virtual laboratories.

■ The goal is to develop new technologies for the global Internet.

■ The project costs about \$500M.

degrading service to match bandwidth.

Such a system could eventually help companies that need medical communications links to remote locations.

Although Internet2 is now mostly used by universities, organizers hope high-speed networking technologies being

developed for it will improve the Internet, or InternetI. Corporate users could benefit if, for instance, if technologies are deployed that could ensure high-quality video and audio links across the Internet.

Floods of Bandwidth

Internet2 is perfect for what Wall is trying to test, because it gushes bandwidth. About 150 universities and 50 corporate partners have been collaborating since 1996 on advanced networking technologies connected by a high-speed Internet network that operates at 2.4G bits/sec.

But for Internet2 application developers, who gathered in Washington last week at the Internet2 member meeting, bandwidth isn't everything.

"We can put our tons of

Continued from page 1

Feds Probe for H-1B Visa Abuse

allow highly skilled foreign professionals — including IT workers — to hold jobs in the U.S. for up to six years. The increase was widely criticized by U.S. labor groups, which claim that companies favor foreign workers because they are

cheaper than their American counterparts.

Companies alleged to have violated the H-1B visa rules could face fines or criminal prosecution or could lose the right to apply for visas for a period of time, according to an

INS spokeswoman and immigration attorneys.

The potential, meanwhile, for visa problems to disrupt IT works in progress justifies asking services firms if their employment practices face scrutiny, analysts said.

Founded in 1994, QIS has more than 400 employees at 10 offices in the U.S., Canada, Singapore, India and Great Britain, according to its Web

site, "The company provides services and consulting in Internet and enterprise resource planning systems development and integration."

Chadwell, the assistant U.S. attorney prosecuting the Surapenini case, said the case isn't related to the quality of QIS's work.

"As far as I know, the work done by QIS was fine," he said. Chadwell said QIS clients face no legal liability related to the proceeding.

There is another risk IT shops need to consider, however. Mark Cecere, an analyst at Giga Information Group Inc. in Cambridge, Mass., said the issue of legality of visas rarely comes up when companies hire outsourcing partners that rely on foreign labor.

However, he cautioned that companies that outsource their data centers or other large parts of IT should consider this issue going forward.

"It's less of an issue if the outsourcing is playing a supplemental role, because if they drop off the radar, it won't hurt you as much," Cecere added. ■

Budget Rent a Car Joins Online Bidding

Customers can pick price they will pay

BY TOM DERNERICH

Budget Rent a Car Corp. last week announced a new Web-based service that will let customers name their own price for automobile rentals — within limits.

BidBudget (www.bidrbudget.com), scheduled to roll out this month, was developed in response to "changing consumer travel-purchasing patterns," said Budget spokeswoman Susan Welty. She said the new service taps Budget's existing yield-management and reservation

systems.

The site has an area where customers choose a location, select the type of car they want to rent and then name the rate they're willing to pay.

For example, a traveler headed to Dallas looking for a mid-size car could pay \$25 each day for a model that regularly rents for \$35. "It just needs to be a reasonable bid," she added. "For instance, if the bid was \$25, well then..."

If the site lets Budget rent even one extra car each day in each city it has an agency, it will have a "very positive financial impact on Budget," said Sandy Miller, Budget's chairman and CEO, in a state-

ment circulated by Budget.

Though similar to the services of Priceline.com, a company that lets users bid on airline tickets, hotel rooms and even home mortgages from multiple vendors, BidBudget is a branded entity that actually provides the products.

Budget Bomb?

Ron Rappaport, an analyst at Zona Research Inc. in Redwood City, Calif., said BidBudget could end up threatening Budget's existing sales if consumers consistently bid lower prices than Budget normally charges.

"I don't see the value, unless Budget is only going to allow

consumers to bid on cars that it otherwise wouldn't rent," Rappaport said. "And if that's the case, it has to be made very clear to the consumer."

"With this service, people who are very price-conscious can have it both ways. They can try and get a cheap deal and not have to go to another rental agency to do it," said Erica Ruggles, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Budget's competitors will almost certainly follow suit, according to Jules Street, a vice president at Kilkis & Associates in Palo Alto, Calif. And companies like Stamford, Conn.-based Priceline are also likely to join this space with bidding services that encompass several rental car companies, he added. ■

MOREONLINE

For more news links and articles related to H-1B visas, visit our Web site: www.computerworld.com/moreonline

SUN FORCES YOU TO
AKE A CHOICE BETWEEN UNIX AND NT.
WHAT A GREAT SOLUTION. FOR SUN.



1SEQUEN

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The next generation clearly leverages both the intranet and Internet as central resources for knowledge. If knowledge is a corporate asset in your organization, Office 2000 could be a very useful tool for creating and managing it. Custom installation is drastically different and much improved...I loved the install-on-demand feature.

— Andre Kvitka, *InfoWorld*, 8/10/98

”

“

Microsoft's Office 2000 is more like a platform than a suite of productivity applications. Organizations can choose to integrate third-party applications or customize the platform to suit their own applications and environments. Building on the Office 2000 platform can dramatically improve the overall desktop application management problem for IT.

— Amy D. Wohl, *Wohl Associates, Inc.*, 3/19/99

”

“

The next generation of Microsoft's desktop productivity suite goes beyond the desktop, linking workgroups together with Web-based technology—potentially making teamware and low-end groupware products obsolete.

— Steve Gilmor and Jeff Angus,
Information Week, 8/10/98

”

“

Office 2000 exhibits tighter integration with the Internet, better collaboration tools, and easier installation and migration features than any other office application suite PC Week Labs has tested... IT managers will find a lot to like in Microsoft's next release of its office application suite, including the great strides made in features that handle deployment.

— Herb Bethoney, *PC Week Labs*, 8/10/98

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IT Services Firms Are All Staffed Up, but in Wrong Areas

Some seek to retool ERP for e-commerce

BY BRIAN COLE - DOMOLSKI

Labor issues continue to vex some of the nation's largest information technology services firms, but the problem isn't a people shortage.

Rather, it's that some of the companies are caught flat-footed with lots of year 2000 and enterprise resource planning (ERP) experts at a time when corporate customers are demanding experts for customer-service, e-commerce and supply-chain projects.

So several IT services firms

are trying to retool and retrain their staffs for hotter skills as the work to prevent smaller firms from stealing their busi-

JUST THE FACTS

- ### Staffing Woes
- Labor issues facing IT services firms include:**
 - Slowing demand for ERP experts
 - A need to retrain workers in better Internet technologies
 - Increased competition for talent from small firms

ness and their people.

Lots of companies have to continuously train IT workers, "but we feel the pressure intensely because IT services is our only business," said Gale Fitzgerald, chairman and CEO of Computer Task Group Inc. in Buffalo, N.Y. The company recently rolled out a program of continuous training for consultants to keep up with market demand for new services.

The staffing woes could make it harder for large services companies to deliver on their commitments and to compete against smaller, more agile firms, said Maria Schaefer,

an analyst at Meta Group Inc. in Stamford, Conn.

Already there's evidence that IT services giants are feeling pressure from startups. Input Inc., a research firm in Vienna, Va., reported April 22 that small firms are taking an increasingly large piece of the outsourcing pie. Though a handful of the biggest players still own more than 50% of the outsourcing market, small vendors are gaining ground in areas such as customer relationship management. "Companies have gotten suspicious that one service provider can deliver best-of-breed services in all

areas," said Albert Neikirk, an Input analyst.

To reverse this trend, services giants are badly shoring up their expertise in e-commerce, customer relationship management, data warehousing and supply-chain management, said Tim Bourget, an analyst at Kennedy Information LLC, a research firm in Fitzwilliam, N.H.

Time to Retrain

For instance, Cambridge Technology Partners Inc. in Cambridge, Mass., is retraining about 400 ERP specialists to transfer to its e-commerce practice. Others have gone on a buying spree to build up boutique practices in hot areas. Sapient Corp. in Cambridge, Mass., and Boston-based Keane Inc. last month bought smaller services firms that specialize in e-commerce.

Staff retention — holding at around 25% for services firms — also continues to be a problem. Most IT services firms offer competitive pay, bonuses and perks, but observers said some of the best consultants from large firms have recently moved to small firms.

"Most people are looking to work on cool projects, not on commodity services like running somebody's data center," said Wayne Segal, an analyst at Credit Suisse First Boston Corp. in New York. ■

SOFTWARE LICENSE PLAN MOVES AHEAD

Disputed Article 2B heads to the states

BY KATHLEEN MELNYKOWA

AN END RUN by proponents of a change to the Uniform Commercial Code (UCC) may bring controversial software regulations, together known as Article 2B, before state legislatures this fall, leaving user groups opposed to the bill in disarray.

The American Law Institute's (ALI) refusal to endorse the UCC's draft for Article 2B has caused the National Conference of Commissioners on Uniform State Laws (NCCUSL) to try a new tack in its bid to promulgate rules for software sales and licensing agreements.

On April 7, the commissioners group said it was repackaging the draft as a stand-alone Uniform Computer Information Transactions Act. That move effectively sidesteps the UCC process, enabling it to move the bill without the ALI.

"None of the substance has changed," said John M. McCabe, legislative director for the commissioners' group. "The big difference is that ALI was a partner with the UCC, and isn't in this."

More than two dozen con-

sumer and technology user groups, including the Society for Information Management (SIM), have opposed Article 2B on the grounds that it's biased in favor of technology vendors and against users. Critics said it would remove legal protections that software buyers enjoy but add costs, reduce vendor liability for software defects and force user companies to devote more time and resources to negotiating license terms.

"The NCCUSL was apparently being thwarted by the ALI and the vast groundswell of people who felt 2B was not well done. What they couldn't do directly were they're trying to do through the back door," said Susan Nyheim, a lawyer working on behalf of SIM.

Fast Track

The repackaging changes the timing of the process in ways that worry opponents. As Article 2B, the draft was stalled at least until May of 2000. As a stand-alone measure, it could be approved during the national commissioners' meeting in July and could be introduced in state legislatures this fall.

That could lead to some quick approvals of the article

by state legislatures because the draft's supporters are more organized than its opponents, said David Rice, a professor at Roger Williams University in Bristol, R.I., who was one of three ALI representatives on the Article 2B drafting committee.

Even so, losing the institute's participation is a public rela-

tions black eye for the NCCUSL. "One would hope that commissioners and state governments might realize that if ALI has reservations about this model law, they should have some qualms about it as well," said Pam Samelson, a University of California at Berkeley law professor who has been following the process.

The article's opponents are determined to fight back. "More and more companies are finding this unacceptable, and I'm quite sure they'll be resisting it at every level," Nyheim said. ■

Database Deal Aims to Aid Corporate Buyers

SAS, D&B system to track procurement

BY STEWART DECK

SAS Institute Inc. and Dun & Bradstreet Corp. last week announced a partnership to offer systems to track procurement throughout an organization.

Dun & Bradstreet will use its business database to match up a company's list of business names and products; SAS will add its expertise in business intelligence to offer users a consolidated view of the data.

That kind of data may be distributed now through a company in multiple lists. But because most companies don't have a central system of supplier procurement data, they

don't have a clear view of all that they're buying, said Larry Barth, a vice president at Dun & Bradstreet.

"Having a consolidated view of procurement will allow companies to make smarter and [more] strategic buying decisions, with some large potential savings," said Katherine Jones, an analyst at Aberdeen Group Inc. in Boston. For example, knowing how often and exactly what's being bought, from a single supplier can help companies negotiate better contracts, she said.

The partnership will provide software and consulting services. Dun & Bradstreet will comb through a customer's data sets and assign a specific numeric identifier code along with detailed background data

to each vendor mentioned. It will likewise assign a code for each purchased item.

The SAS data warehousing and decision-support tools will be able to look for commonalities and give users a complete view of what they've bought and from whom through an intelligent desktop client viewer called the Strategic Procurement Manager.

One SAS user said the partnership sounds like a good fit for business-to-business arrangements but won't be of immediate help to him. "We are most concerned about relationships with our consumers" and not with suppliers, said Larry Sharpe, vice president of marketing at Vermont Country Store, a catalog retailer based in Manchester, Vt. ■

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THE DOCUMENT COMPANY

GANGS NET MILLIONS FROM SOFTWARE PIRACY

California syndicates use global profits for other, sometimes violent crimes

BY KIM S. NASH

IT STRUCK THE WIFE of a Microsoft Corp. employee as odd when she saw it. Why would two small print shops in the Vietnamese-dominated "Little Saigon" section of Westminster, Calif., be pumping out user manuals for Windows 95?

She tipped off Microsoft, whose internal team of ex-cops and lawyers gathered evidence to take to the Westminster Police Department. The police, in turn, discovered the shops were big players in a much larger, complex network of Asian gangs in Southern California. The crime ring produce and sell counterfeits of Microsoft products, then use the multimillion-dollar profits to finance big-time and sometimes violent crimes.

"We work these cases not because we are the Microsoft police," said Marcus Frank, a sergeant on the Westminster force and a specialist in Asian crime syndicates, "but [because] we're cutting off an amazing amount of funding for narcotics, prostitution, extortion — all those things organized crime is commonly known for."

Black-Market Boom

Counterfeitors can make Windows 98 for about \$10 and sell it for \$5 to \$70, a sharp discount from the \$90 street price for the legitimate product. Along with the CDs and disks, the criminal groups systematically reproduce Microsoft-like cardboard boxes, warranty cards, end-user license agreements and even the full hologram that Microsoft uses to mark products as authentic.

"Millions of dollars move," said Annmarie Levin, a Microsoft lawyer leading prosecution of some of the worst cases.

In the print-shop case, the Westminster police and the U.S. Customs Service arrested 15 men and seized an industrial

printing press, a shrink-wrap machine and crates upon crates of illegitimate Windows 95 documentation.

That bust eventually led police to a web of criminal opera-

tions. It hasn't all figured out yet, but various investigations have provided glimpses of the operation. A bust in Monterey Park turned up \$6 million worth of fake Microsoft products and \$3 million in cash. In a Rowland Heights case, police went in looking for software and also found a large cache of guns and explosives. Ming Ching Jan later pleaded guilty to software piracy, money laundering, possession of illegal explosives and kidnapping.

Intense police activity has now shifted to Paramount, a sunny suburb south of Los Angeles. Since last fall, more than \$56 million worth of fake Microsoft products have been recovered.

After a February raid on 11 warehouses and cars, three men were arrested — including a midlevel leader, Hemant Navnit Bhambhani. The strike turned up 4 million pieces of fake Microsoft products, plus machines such as replicators and printing presses. Also among the confiscated tools of the trade were 10 stampers, which are dinner-plate size master disks that can each produce 140,000 to 150,000 CDs. It took three days and nights to collect all the evidence.

"It reminds me so much of the war on drugs," said Levin, a former district attorney in New York. Both need large financial backing up front to import and export the goods. Both involve millions of dollars in profits. And more than special skills, both require carefully organized activities to be successful.

Snap on the Wrists

But unlike narcotics cases, software piracy results in scant jail time and relatively small money fines. Though that's gradually changing, and convicted pirates are seeing harsher sentences, the Monterey Park courts, for example, give just 18 months in jail.

Real punishment comes from convictions for money laundering, when counterfeiters hide money in offshore bank accounts or buy property in the names of relatives, for

example. "That will get you 20 years in the federal system per count, as opposed to one to three years," which is typical for software piracy.

Neither Microsoft nor the police know for sure where the expensive production equipment like replicators and stampers come from. CD stampers are thought to come from China and other parts of Asia, though most replicators are probably built or bought in the U.S., said a key Microsoft investigator and former Los Angeles police officer. She asked that her name not be used.

Once the gear is seized, investigators can pinpoint which CDs were made by which machines, Levin said, though she declined to say how that sleuthing is done. But using that technique, Microsoft has traced shipments of fake CDs to Spain, Portugal and various countries in Asia.

Fake Licenses

A new gang product has emerged during the past six months: fake Microsoft end-user license agreements. It's a

simple black-and-white paper that looks like Microsoft's and reads like Microsoft's but is worthless. "Like a fake ticket to a baseball game," Levin said. Microsoft sells agreements in a box or special envelope, but counterfeeters offer them stand-alone.

Investigating these criminals is getting harder. Undercover buys don't work, because the gangs will rarely, if ever, deal with someone they don't know.

The gangs also use counter-surveillance tactics. One member will drive around behind a moving van full of counterfeit products to make sure no one is tailing them to the drop-off location. Or the van's driver will duck in and out of quiet streets to see whether anyone is behind him. "They may take an hour to drive one mile," the Microsoft investigator said.

Microsoft's big profits have spurred even traditionally unfriendly Asian factions to cooperate, Frank noted. For example, police found that a Laotian gang caught for counterfeit documentation had been hired by a Chinese syndicate.

"It's not uncommon to find two groups who are mortal enemies, shooting each other, also cooperating," Frank said.

"Crime makes them all money, and there's lots of money to be made in software crime."

Fake Software Stacked to the Ceiling



Police in Southern California have found warehouses full of fake Microsoft manuals, packaging and "certificates of authenticity."

Microsoft's software
CD makers typically
produce 90,000 CDs
before sending a
replicator. But coun-
terfeitors often pour
out 70,000 or more,
which results in faulty
discs.



Photo by AP/Wide World
Inset photo by AP/Wide World

ATIONS IN SOUTHERN CALIFORNIA, stretching from Los Angeles south to Westminster and west to Diamond Bar. Investigations are ongoing.

At the top of the food chain, Frank explained, are the mob men, most likely from China and Taiwan, who finance the CD makers in California. The producers then engage middlemen to find printers. They, in turn, subcontract various pieces of work — such as lenses and registration cards — to smaller shops. When all the components are ready, the middlemen collect them and find someone to shrink-wrap and assemble them.

Area police departments

Chernobyl Virus Not Even a Cold for Most U.S. Companies

BY ANN HARRISON

U.S. companies just experienced the upside of March's Melissa virus outbreak. Improved virus protection strategies shielded many of them from the fierce Chernobyl virus that detonated last Monday.

Only 2,328 computers in the U.S. were reported to be damaged by the virus, according to the Computer Emergency Response Team (CERT) Coordination Center at Carnegie Mellon University in Pittsburgh. Most of the reported victims were home computer users and university students and faculty, said CERT spokesman Bill Polak. By contrast, 100,000 computers were infected with the Melissa virus, CERT said.

"The main reason most U.S. business were spared was that the Melissa virus and its novelty inspired companies to update or actually purchase antivirus software," said Sal Viveros, marketing manager at Network Associates Inc. in Santa Clara, Calif.

Overseas Outbreak

But the Chernobyl virus damaged at least 700,000 computers in the Middle East and Asia. In South Korea, the virus infected over 250,000 computers. The virus also damaged about 100,000 PCs in China and 300,000 in Turkey, government officials said.

Because foreign companies were uninformed about the Melissa virus, Viveros said, they failed to take defensive measures. The widespread use of pirated software in Asia — which encouraged the exchange of infected executable files — contributed to the spread of the Chernobyl virus there, he said.

Also known as CIH 1.2, the virus was created last year in Taiwan and infects computers running Windows 95 and 98. It deletes data on a computer's hard drive and attempts to overwrite and destroy a PC's flash BIOS, which is needed to boot the computer. The virus is known as Chernobyl because it was set to activate on the 13th anniversary of the Chernobyl nuclear disaster.

Steve Trilling, director of research at Symantec Corp.'s Anti-Virus Research Center in Santa Monica, Calif., said that in most cases of Chernobyl in-

fection, the first megabyte of the host hard drive was overwritten, wiping out the master boot record and requiring the

disk to be reformatted. If the virus also damaged the flash BIOS, the motherboard would have to be replaced, he said.

Those who didn't run an infected program last Monday didn't have any data erased. But Trilling cautioned that they

may still have infected programs — and that the virus is set to trigger again on June 26.

MORE THIS ISSUE

For Computerworld columnists Frank Hayes' take on the Chernobyl virus, see page 98.

We don't make this stuff up.

Company's controller says she stole millions from firm

RICHMOND, Va. — The co-owner of a computer consulting firm has acknowledged she is guilty of stealing between \$8 million and \$12 million from her employer, her lawyer said.

Prosecutors alleged that Mary Adams Collins, 31, stole the money from Halifax Technology Services Inc. to purchase real estate, jewelry and automobiles. She was charged Thursday with federal bank fraud and money laundering.

Collins has signed a plea agreement admitting guilt and saying she will make full restitution, said her attorney, Thomas Wofford.



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BRIEFS

Compaq to Resume Presario Sales Online

Compaq Computer Corp. last week released guidelines that Internet distributors must follow to sell the company's Presario consumer PCs online and said it will soon re-establish that sales channel, which it halted in February. Requirements for online resellers include a Web site where only new Presarios are sold, regular telephone customer support hours and e-mail customer support.

AT&T, Japanese Telco Target Corporate Nets

AT&T Corp. and Japan's Nippon Telegraph and Telephone Corp. (NTTC) last week signed an agreement to jointly sell network-related services to multinational companies. The world's two largest telecommunications companies, AT&T and NTTC, will offer services for designing, building and managing networks for large corporate customers.

Dell Adds Online Store For Latin America

Dell Computer Corp. last week launched an online store for Latin-American customers (www.dell.com/lat). Dell officials said the move was prompted by the region's "tremendous dynamism" involving the Internet. The company said it plans to open a Portuguese-language store specifically for Brazil before year's end.

Short Takes

ORACLE CORP. said it will acquire Netherlands-based mobile software vendor TINOWAY INTERNATIONAL B.V. Terms weren't announced. INTEL CORP. CEO Craig Barrett said about half of Intel's venture capital investments over next year will go to companies in Europe, Latin America and Asia. This year, more than 80% will go to U.S. companies. ... Britain's GENERAL ELECTRIC CO. last week agreed to purchase Pittsburgh-based FORGE SYSTEMS INC., a vendor of Internet switching equipment, in a \$4.5 billion cash deal.

HP TO OFFER 'E-SERVICES' TO INTERNET PROVIDERS

Risk- and revenue-sharing model is part of e-commerce strategy

BY JAIKUMAR VIJAYAN

HEWLETT-PACKARD Co. last week announced it will provide — at no initial charge — technology and service bundles to Internet service providers so they can offer e-commerce services to small and midsize companies.

A key aspect of HP's strategy is a new risk-sharing business model: In return for a portion of future service-related revenue, HP will help Internet service providers deploy, support and co-market the e-commerce services, without their having to pay hardware or software costs upfront.

HP's approach should reduce any risks that providers face in hosting e-commerce services. It also will make e-commerce options, such as electronic storefronts and online credit-card processing, more available and affordable for small and medium-size businesses, said Nina Lytton, president of Open Systems Advisors, a consultancy in Boston.

"Large companies have a lot of options. ... It is the smaller ones that need something sophisticated and moderately priced," she said.

Helping HP deliver the pre-configured hardware, software and integration services will be a team of vendors that so far

includes the following:

- Bluebeam Software Inc. in San Jose, which provides ShopZone software for building online stores;
- ClearCommerce Corp. in Austin, Texas, which offers payment processing software;
- Cisco Systems Inc. in San Jose, which provides router technology.

HP's E-Services initiative marks an important phase of its unfolding Web strategy, said Thomas Kuchavry, president

of Summit Strategies Inc. in Boston. Not only will HP deliver the infrastructure technologies and middleware — needed for e-commerce applications, but it will also increasingly seek revenue from application hosting and shared-risk ventures with its customers, he said.

An example of this strategy is HP's purchase last October of Open Skies Inc., a vendor of airline reservation system software. Small and medium-size

airlines will pay HP a few cents for every ticket sold, in exchange for HP hosting the airline reservation system.

A major component of the strategy will be to partner with or buy companies that will help HP deliver such technologies and services, said Nigel Ball, general manager of HP's E-Services division.

Just last week, for instance, HP announced it's investing \$35 million in a partnership with BroadVision Inc. in Redwood City, Calif. The two companies will develop software that help companies build corporate Web portals. ■

Celeron Machines Draw Corporate Interest

Intel budget chip aimed at consumers, but IT bargain-hunters may bite, too

BY MATT HAMBLEN

Intel Corp. last week unveiled its latest Celeron processor and a chip set aimed at low-cost PCs.

Although they will appeal mainly to consumers and small businesses, Celeron-based machines could also interest some midsize businesses and corporations that neither need nor care for the higher-priced Pentium III systems.

Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif., said that the

new Celeron 466-MHz processor and new 810 chip set will make \$300 to \$1,000 PCs "real for corporations, not just consumers."

Enderle said midsize PC companies are "looking for value when making purchases," and Intel's Pentium III isn't considered a value. "Right now, the Celeron provides more than enough performance the market is requesting," he said.

Several PC makers, including IBM, announced they will adopt the Intel products. IBM expects to sell many Celeron 466s inside its IBM PC 300GL line for large corporate customers, said Greg Ross, IBM product manager.

Celeron machines appealed to Suburban Plastics Co. in Elgin, Ill., a plastics maker with 223 employees. The company bought 20 Gateway PCs — with Celeron 333-MHz processors — at \$1,000 apiece a year ago.

"Value was a big part of it, since speed and Pentium performance was not critical for us," said Dennis McElroy, systems administrator. Many corporate users have said they

don't see the value of the 900-MHz Pentium III [CW, March 22].

"We have had no regrets and no problems using Celeron" because the PCs are used for database access and word processing, but not for Web browsing or graphics, McElroy said. He said he wouldn't hesitate to buy Celeron machines again.

Analysts said Intel has created a conflict by producing both higher-priced Pentium III chips, now with 500-MHz processing speeds, and the less expensive Celeron.

"Intel's conflict is that they don't want to be too successful at the low end and take away from the high-end business. But they don't want to lose out to competitors at the low end" such as Advanced Micro Devices Inc., said Roger Kay, an analyst at International Data Corp. in Framingham, Mass. ■

SNAPSHOT

COMPANY	REVENUE		NET INCOME		LOSS/T
	Q1 1998	Q1 1999	Q1 1998	Q1 1999	
Amazon.com	\$293.64M	\$67.39M	(\$61.67M)	(\$10.37M)	
America Online	\$1.3B	\$275M	\$17M	\$35M	
AT&T	\$14.1B	\$12.8B	\$149M	\$708M	
Barns	\$175.77M	\$179.48M	(\$18.08M)	\$2.4M	
CA**	\$1.63B***	\$1.47B	NA	NA	
Merial Networks	\$4.42B	\$3.51B	(\$470M)	(\$332M)	
Qualcomm	\$932.4M	\$760.59M	\$85.2M	\$181.62M	
Versant	\$6.2M	\$4.6M	(\$1.4M)	(\$5.9M)	

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Microsoft

Where do you want to go today?

PAUL GILLIN

Privacy politics

IT'S DEPRESSING to hear members of Congress describe government regulation of Internet privacy as "inevitable" [CW, April 26]. These are the same people who dreamed up the Communications Decency Act of 1997 — quite possibly the most moronic piece of technology legislation ever passed.

But Congress will regulate the Internet if it can. At least five privacy-related pieces of legislation are either pending or are likely to be introduced this year, including one that would create a privacy regulatory agency. Privacy is a shiny bauble to lawmakers. It's a no-lose proposition that lets politicians put a symbolic stick in the eye of business without raising taxes. And who's against privacy, anyway?

Unfortunately, the issue is a slippery slope for Internet merchants because it opens the door for the government to start regulating the way they deal with their customers. Sadly, Web merchants asked for it. Internet businesses have done a lousy job of self-regulating privacy, despite symbolic moves like IBM's bold declaration that it won't advertise on Web sites that don't post privacy policies.

There are two basic problems. One is the rapid growth of the Internet. About 50 million people have come online in the past five years, most knowing nothing about e-com-



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merce. A few scary stories are enough to spook new users into demanding more controls.

But merchants haven't helped matters by taking liberties with their own customers. Think of it: Why should I give someone my fax number and birth date just so I can read a news article? Why should a Web-site operator assume I want to receive junk e-mail unless I choose not to?

Nonetheless, if Congress gets a regulatory foot in the door defending privacy, it could clamp down on other areas of the growing Internet medium. That's why online merchants need to lobby their representatives to reject the privacy initiatives. The market, over time, will weed out those site operators who don't respect their customers. And users will get more savvy with experience.

Creating a federal privacy agency to clamp down on Internet businesses right now is in nobody's best interests — not consumers', not merchants', not even Washington's.



DAN GILLMOR

More diverse Web will present IT a new challenge

AS IF YOUR LIFE wasn't already complicated enough, here comes the widening and thinning of the Internet — and a new set of demands on IT skills. For IT, that change represents a challenge. The end of the one-size-fits-all Web means that pure content becomes even more critical than it was before.

The Internet is getting wider as high-bandwidth pipes reach beyond businesses and into homes, hotels and dorms, eventually, just about everywhere. It's also getting thinner, however, as a variety of low-bandwidth, Net-enabled wireless devices begin to hit the market.

When your users are plugging into the company from a high-bandwidth pipe at home, they'll want to do everything they can do at the office. And when they're pulling down data on a cell phone's tiny screen, they'll want only the most basic kinds of information — pure text, for the most part — as opposed to the graphics they often expect on PC screens.

How will IT handle this? One place to focus on will be Extensible Markup Language (XML), which neatly separates content from structure. XML will be essential to any organization that wants to make information available on a variety of devices.

For another thing, don't assume every Web server will handle requests from all devices. You don't expect a paper to send an alert to your PC (though maybe it should). Plan to serve specific devices, in some cases, with dedicated content and servers.

The vendor community is well aware of the problems, naturally, and is working on a variety of products to address them. The basic idea is to let content creators set up one Web site and automatically reformat the data as it's being dished out to various devices, ensuring the best possible display on all of them. Early adopters include Yahoo, which just signed a deal with Online Anywhere — a Motorola-funded start-up in Silicon Valley — for technology that helps deliver content to different devices.

Big companies are into it, too: IBM is testing a system that does much the same kind of thing.



DAN GILLMOR is technology columnist at the San Jose Mercury News. Contact him at dgillmor@mercurynews.com.

All of that is good news for consumers and workers, who will have more choices in how they deal with information. And yes, IT will find itself facing new tasks and huge new planning issues to create morphable content.

Ultimately, the trend should prove to be good news for companies. Anything that makes their employees and customers happier and more efficient will be good for them, too. ▶

DAVID MOSCHELLA Companies need to optimize the Web — or else

IF YOUR ORGANIZATION is struggling to incorporate the Web into its traditional business practices, rest assured you're not alone. As the recent turmoil at Compaq indicates, even some of the biggest and best high-tech companies can find the Web difficult to accommodate. Six years into the Internet era, what can we say about how the IT industry is managing to cope with its own creation?

Overall, the impact of the Web on large, pre-Web IT companies can be roughly broken down into three main types of results. Some companies have clearly been helped; others have faced serious, Web-rooted challenges but have successfully dealt with them; still others have been hurt. Let's look at each group and see what we can learn from their experiences.

The first group is the easiest to explain and the happiest. For companies such as Sun, Cisco, Dell, EMC and Oracle, the Internet is like having a

strong wind at your back. Clearly, the Web has greatly stimulated customer demand. But perhaps more important, because all of those companies have always sold primarily via direct channels, the Web hasn't created any serious business-model conflicts.

Those vendors' situations are analogous to mail-order companies such as L.L. Bean or Lands' End, for which the

Web is mostly an unmitigated blessing.

A second group consists of companies for which the Web was a potentially serious problem but that have successfully managed to turn it into a major opportunity. Included in this list would be Microsoft, Novell, IBM and its Lotus unit.

Regardless of how one feels about Microsoft's business tactics, its rapid reorientation around the Internet has decisively demonstrated that

each new computing paradigm doesn't necessarily dictate a change in supplier leadership.

Like Microsoft, both Novell and Lotus had to update their products in order to support Internet standards and pursue various Web opportunities. Novell has risen from its near-death experience and is on the verge of once again becoming a high-flying network software company.

With Domino, Lotus quickly and simply did what many had said was impossible: It integrated Notes and the Web into a largely seamless capability.

Finally, IBM has used its marketing and service prowess to position itself as a real leader in e-commerce offerings and systems integration. In short, all four companies are examples of businesses that needed to make real changes and did.

Our third group consists of those companies that, although still generally successful, are clearly struggling to find a home within the Internet community. Chief among those is Compaq, but my list would also include Hewlett-Packard, EDS,

many of the telecommunications companies, and, previously, Digital.

Of those, Compaq and HP are the most instructive. Compaq appears willing to do just about anything other than accept the fundamental superiority of the direct-sales model. HP faces similar PC channel challenges, but it's also searching for a larger, IBM-like, Internet story.

Following the strong precedent of IBM, AT&T and EDS, both Compaq and HP are seeking new CEOs from well outside their own ranks, a clear admission that the desired changes haven't been happening fast enough.

In which of those three groups does your business fit? Because the wind can't be at everyone's back, many companies will either have to change or suffer. Here, the lessons of the IT industry are clear. Real change is possible, but not every company can do it quickly enough within its own culture. Strong leadership is essential, at the CEO level and below. ▶

Because the wind can't be at everyone's back, many companies will either have to change or suffer.

READERS' LETTERS

Taking on the terrors of the terabyte

YOUR FRONT-page article ["Terabyte Headaches," CW, March 22] on managing terabytes of data from a physical sense is quite applicable for many systems, but note more than the growing data warehouses that are seemingly in everyone's plans. I suggest that one company has an interesting solution for this abundance. Query Object Systems (www.queryobjects.com) uses mathematics to reduce the size of data warehouses by factors of 100. Companies like MCI are using this with their Informix data warehouses to reduce processing time, storage needs and costs.

I also found it interesting that editors on the evils of Intel's privacy-reducing serial number in its Pentium III chip appeared in Com-

puterworld and every major publication, but the maintenance of huge quantities of data, presumably related to transactions by individuals, seems acceptable. If companies want to invade privacy, all they need to do is buy some links and do some "joins" between databases. No serial number is needed.

Harry A. Berkley
IT director
W.R. Berkley Corp
Greenwich, Conn.

Tech Industry stuck in the Middle Ages

THIS SO-CALLED labor shortage is of the industry's own making. There is a shortage of people with five years' experience in the hottest skills who are willing to work 80-hour weeks. There should be — they self-destruct.

But there isn't a shortage of people who are hard-working, intelligent

and capable in the IT field. The problem is the industry's unwillingness to employ part-time workers, its reluctance to let experienced workers in new technologies and its narrow focus on employing people based on buzzwords rather than capability.

It's ironic that companies that claim to be establishing a new age of doing business are still stuck in the Middle Ages when it comes to employment practices.

Sheil Dunne-Hamilton
Rochester, N.Y.
sduane@kodak.com

Melissa aftershock

AS AN ADD-ON to your story about companies being affected by the Melissa virus ["Suspect Arrested as Melissa Virus Mutates," CW, April 5], you should mention the downstream problems generated by sites shutting off their servers. The main problem at

Western Carolina University has been that mail is backlog up as it waits to be delivered to those sites that are either overwhelmed or turned off.

This adds to the overhead of a mail server by attempting to deliver this backlog of queued mail over and over.

Most of our user complaints have been about the long delay of sending and receiving messages that are normally delivered very quickly.

Joel McKenzie
Western Carolina University
Cullowhee, N.C.
www3.wcu.edu/~mckenzie/

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Merylyn Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Commercial Pkwy, Framingham, Mass. 01701. Fax: (508) 625-6931. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.



DAVID MOSCHELLA is an author, independent consultant and regular columnist for Computerworld. Contact him at dmoschella@prodigy.net.

HELEN PUKSZTA

Forget knowledge management; back to information

IT'S TIME WE STOPPED pretending that we can manage knowledge and conceded that the best we can do is what we haven't quite mastered in the first place — manage information.

In simpler times, knowledge and information were customarily interchangeable terms. To have knowledge of changing customer preferences was to have tacit or explicit information that supported it. But then knowledge management experts

declaimed lofty distinctions among data, information and knowledge. Never mind that whatever we capture in IT is, ultimately, data. And what qualifies as knowledge in one context is barely information in another. According to my own unscientific survey, few people in business or IT can tell precisely where information ends and knowledge begins. Why is that, after all these years, we still don't get it? Because most of the proposed distinctions are neither practical nor elucidating.

The only sound distinction between knowledge and information is that knowledge has an inseparable component: cognition. It's that mental faculty by which we acquire knowledge and without which we just don't know. And no matter how much information you extract from experts present in all the right contexts, and try to make actionable, if I don't get it, it will never be knowledge to me. And if it's presented before I have my coffee, it might not even make it from jumbled data to information.

If you view knowledge as a state of knowing or understanding (alas, I can't claim that definition as my own — Descartes and every dictionary give it to first), "knowledge management" smacks of something like "thought management" — an unappealing concept. We can't manage anyone's ability or willingness to know. And until we come up with a technology that will extract, analyze and synthesize information and then recommend to a business manager what to do, we're still quite managing knowledge — we're still trying to manage information, hoping that it will enhance someone's knowledge and ability to make the right decisions at the right time.

With knowledge processing still largely the domain of humans, we're stuck with mere information processing — and with the perennial need to hire smart people.

Knowledge management experts frequently be-

moan the fact that whenever they look closely at corporate knowledge management efforts, what they typically discover is ordinary information management. One might ask: What did they expect to find? A reification of knowledge, perhaps?

If knowledge management is here to stay, I suggest we agree that for us in IT, it's really a variation of good old information management. Sure, this time it's not about traditional accounting, control or even historical data. The focus instead is on facilitating the generation, sharing, acquisition and application of knowledge in an organization. And although IT has a tremendous role to play here, as always, people and processes are just as important.

If labeling an effort as knowledge management helps inspire people to learn from others and share their knowledge, and if it helps a company perceive knowledge as a source of value creation and competitiveness, let's go for it. But I also suggest we leave the distinctions between knowledge and information to experts in epistemology and out of the IT realm. ♦

GOPAL K. KAPUR

Why IT project management is so hard to grasp

THREE LATEST INVESTMENT IN IT productivity is project management. Will it pay off? Only if IT professionals develop a clear understanding of the principles and practices of disciplined project management for IT projects. The bulk of the project-management body of knowledge has been developed by the engineering profession — especially civil engineers.

Many IT organizations are trying to replicate the principles, practices and tools developed by engineers to manage IT (and business) projects.

Therein lies the problem.

Based on my experience, first as a civil engineer and now as an IT project management consultant, I strongly believe that there are distinct differences between the two professions. I further believe that IT projects are much more difficult to manage. For a project-management investment to pay off, the engineering project management body of knowledge needs to be adapted and expanded to the specific characteristics of IT projects. Otherwise, the investments in education, training and software tools will come to the same end as most of the other highly touted productivity investments.

Although there are about two dozen differences, the following seven are key:

1. Clearly defined end state. The end state of a typical engineering project is clearly defined through well-documented artists' renderings, architectural models and engineering drawings before any construction work begins. In the case of IT projects, the converse is true. The end state of IT projects is often not clearly defined, or known, even after the project is completed.

2. Linear project phases. The phases of a construction project (architect, design, specify and build) are linear and their boundaries are well-defined. In the case of IT projects, various phases not only overlap, but they even spiral — making the project-management process extremely complex.

3. Creating vs. fabricating. In the case of engineering projects, the construction process primarily consists of fabricating the end product from pre-designed and pretested components. In the case of IT projects, most code is still written from scratch.

4. Deterministic deliverables. Deliverables in most engineering projects are defined in precise terms. For example: "Shaft-wall cavity, l-in. steel C-H studs with two layers of 5/8-in. gypsum board, a two-hour fire rating." IT deliverables are seldom defined to the same degree of specificity and often remain open to different interpretations by different players.

5. Historical information. In engineering, extensive databases of highly accurate and easily usable effort and cost values are broadly available to estimators. In IT, there are few sources of such information. Most IT estimating consists of team members' best guesses.

6. Well-defined responsibilities. In the case of engineering projects, responsibilities of team members, such as steel fabricators, drywall installers, masons, plumbers and electricians, are quite specific. In IT projects, the same person (time permitting) invariably ends up being the analyst, designer, programmer and tester.

7. Symbols vs. text. With engineering drawings and specifications, most of the work is done through standard symbols and terms. In a project for a house, the landscape map by the contractor is drawn to scale, showing the drainage, drip watering, electrical wiring and trees and shrubs using standard symbols and a minimum of text. No confusion. Different construction companies do not create new or different symbols and terms to distinguish themselves from one another. But IT vendors strive to be different by inventing new, nonstandard terminology.

Though the fundamentals of engineering project management apply to IT projects, success will come only to those who are able to understand the key differences and evolve their project-management practices and tools accordingly. IT can make the job of managing projects less difficult by doing the following:

- Develop succinct projects and deliverable descriptions with quantified objectives and well-bound scope statements.
- Limit most projects to four-month durations.
- Make design and code reuse a high priority.
- Collect and use historical effort data, without which most estimating will be a shot in the dark. ♦



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GOPAL K. KAPUR is president of the Center for Project Management in San Ramon, Calif. Contact him at gopal@center-for-project-management.com.

READERS' LETTERS

Column stirs Linux debate: Here to stay, or gone tomorrow?

AS A HARDWARE/SOFT-WARE engineer working with Linux, let me put Paul Gillin's fears to rest: Linux is here to stay! You say ["Linux Reality Check," CW, March 22] that if "corporate support" doesn't materialize for Linux, "it'll flame out faster than you can say 'network computer.'" Funny, Linux has been going from strength to strength since 1993 — without any of this "corporate support."

The "me-too" corporations clamoring to get on the Linux bandwagon and singeing its reliability tunes are basing their lyrics on a code base that had almost zero corporate support to help it get there. Why would it need corporate support to go forward?

No, it's vendors that need Linux's support rather than the other way around. Microsoft can undercut Linux by giving away a competing product for free.

Linux is a movement that says a good operating system should be free, open source and separate from the corporate clutches of a single mega-corporation.

Vigin Mallik
Houston
VMAILIK@juno.com

I WAS BEGINNING to think that I was the only person in the world who believes that Linux is a computer-god toy. This product reminds me of the early days (and, to some extent, these current days) of Unix.

When Linux supports the range of software and functionality that Windows '98 does, I'll believe that it's a reliable piece of software. If all I had to do was support server functionality, Windows NT would be as reliable.

When I worked as a consultant at Lucent, all of our major problems were related to the Unix-to-mainframe interface. And these were typically not mainframe-related interface problems.

We had the task of keeping Unix-based databases up-to-

PAUL GILLIN

Linux reality check

FOR A GROUP that prides itself on individualism, computer vendors sure are being a herd animal at times. The Internet is moving toward Linux as the operating system of choice. That's available on the Internet. In recent months, just about every computer and software company of any consequence — except Microsoft — has announced support for Linux. That, combined with Microsoft's pathetic showing at its annual trist, has prompted some people to wonder what Linux will be Microsoft's downfall.

Well, don't hold your breath. The Linux market is still in its infancy. But we can expect the vendor world to have lots to do with self-interest and little to do with compassion.

Workers are running to Linux today for free big reasons. It's every man for himself.

On the MVS side, data integrity across IMS and DB2 was maintained throughout. Unix, Linux, AIX, Windows — all of the spiffy new stuff — had all of the same integrity and reliability problems that we went through — and solved — with the mainframe 20 years ago.

Silicon - Not a 'silly' matter to some

I'M WRITTEN TO ya becuz I reckon I can't abide by no low-down, dirty-rotoes varmin' draggin' the good name of Payne County, Okla., through the mawne ["Silicon Silliness," CW, March 22]. You quote some old boy in L.A. that don't think we know what silicon is. Wht, durm oest everyone 'round these parts learns about silicon at vo-tech school — it's that there white grease we use down at the lube rack on them fancy imports.

Seriously, never let it be said that we don't have a sense of humor here in Payne County. We have nothing against Silicon Valley — we recently bought a company there. The limits to being successful have nothing to do with geography, thanks in large part to the Web. It has to do with people and their ideas, vision and ability to translate all of that into reality. We merged with a larger company last year, and our location in Payne County was an advantage, not a liability.

It's the anti-Microsoft argument. While the existence of Microsoft alternatives is terribly important, it's equally important to remember that users can't do all that much. In fact, one of Linux's biggest shortcomings is the user base.

On the MVS side, data integrity across IMS and DB2 was maintained throughout. Unix, Linux, AIX, Windows — all of the spiffy new stuff — had all of the same integrity and reliability problems that we went through — and solved — with the mainframe 20 years ago.

Why? Because we're home to the state's largest university, because people can afford to buy a house here, and because there's no traffic, little crime and good public schools.

The next great technological innovation may not come from Payne County, but don't be surprised if it doesn't come from Silicon Valley or Silicon Alley, either.

Jerry Radley Eaker
Software, Okla.
packley@osunet.com

WHEN I READ "Silicon Silliness," the first thing that I did was to scan the list of high-tech cities.

Naturally, I expected to read about Huntsville, Ala., home to Werner Von Braun, Redstone Arsenal, NASA's George C. Marshall Space Flight Center, the U.S. Army Aviation and Missile Command, Intergraph Corp., Cummings Research Park and the 12,000 engineers who live and work here.

I really enjoyed your article and will watch for more of your gems.

Mike Gates
Senior systems analyst
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Mike.Gates@Freightliner.com

IPARTLY AGREE with your assessment of vendor motivation to support Linux, but I disagree with you about user interest.

Vendors are delivering Linux because there is a demand for it. It's true that, for both the vendor and the user, non-Microsoft is a virtue.

We have had a long, sad and expensive experience with the company that believes that it owns our desktops. Linux distributions generally are released when ready, not nine months later than promised and six months before they're complete.

Linus has already won the hearts of many of us who simply want to get our work done without the operating system

getting in the way and without quarterly hardware upgrades.

Office applications have been a weak spot, but with WordPerfect and StarOffice, we're getting there. Training is available, and support for downtime or throughput issues is required less often.

Besides, with Microsoft, do you get support, or do you pay for it?

Larry Brunelle
Allen, Texas
lunref@pacim.org

IPANTED TO compliment you on your article. I com-

pletely agree with your thoughts on the Linux movement. To make matters worse, the news media is pitching Linux and they can't even describe it!

I have non-IT people asking me if Microsoft is doomed because of Linux. Keep up the good work.

Bryan Bowers
Santa Margarita Water District
Pachico Santa Margarita, Calif.
BRYAN@bunw.com

workers, network engineers, software developers, software project managers and, of course, fellow rocket scientists. So how did you miss us?

Duane King
SRS Technologies
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Monitoring IT projects' vital signs

I WAS STRUCK by the irony of Gopal K. Kapur's metaphor ["Bad Management to Blame for IT Skills Crunch," CW, March 22]. Mr. Kapur states that one of four management errors causing IT failure is "failure to monitor a project's vital signs."

He asks readers to "imagine a hospital where nurses and doctors don't routinely monitor patients' vital signs — the mortality rate is sure to soar."

The irony is that as an IT professional and a physician in the field of clinical computing, I find that the vital signs of health care IT aren't monitored — and the cardiac arrest alarms (experts and manage-

ment with appropriate skill sets) are ignored.

Recent financial debacles in managed care organizations are basically due to failed information systems and strategies. Bad management is an understatement.

To Mr. Gopal's four points of bad management, I add a fifth: the "www.phenomenon". The wrong people making the wrong decisions at the wrong time. I have created a Web site (<http://members.aol.com/rosteivw/>) to address these shortcomings.

Scott Silverstein, M.D.
Clinical Computing Consultants
Wilmington, Del.
CCCD@del.com

You'll never guess what we were doing when we came up with the idea for our new server.

Actually, we were thinking of ways to help our clients reduce their total cost of operations. And it occurred to us that consolidating complicated IT environments would be a good place to start. Which, naturally, led to the development of the new Unisys Aquanta™ ES 5000 line of midrange servers based on the equally new Intel® Pentium® III Xeon™ processor. These robust servers help you handle workloads on multiple partitions, while maintaining single-image operations and management. And they improve availability by providing a fully recoverable environment for your applications, databases and transactions. For more points on our new servers, check out our Web site. Meanwhile, we'll be working on our, well, you know. www.marketplace.unisys.com/ent/



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BUSINESS

SAVING CHINA

Software entrepreneur Chai Ling is trying to bring her Internet startup back to China to help change the social fabric there. She says the Net's ability to link like-minded people can make it a political, not just an e-commerce, tool. » 36

TRUST E-BANKS?

Online banking scams are making it tough for legitimate banks to do business over the Internet. Industry groups are working to make the Internet more secure, but they still struggle to make it as safe as the local ATM. » 46

Y2K BLAME

Users are split on whether they like the laws Congress is considering to delay Y2K lawsuits and limit damages. Holding off lawsuits might encourage last-minute cooperation, but would it overprotect the underprepared? » 38

SELLING TO THE BOSS

Ever get a call from the boss wondering why you turned down that nice sales rep he just talked to? Being eod-run by vendors you turn down isn't only annoying; it makes you look bad. Learn how to stop the practice. » 42

JUSTIFYING COSTS

User companies spend more on hardware than you'd expect, if it's true

that computing power increases exponentially while not increasing much in price. Paul A. Strassmann finds the source of the discrepancy and a way to quantify how your hardware costs stack up. » 44

FACTORY FIX

Finding packaged software that would support ultrafast robot flow manufacturing techniques is only the beginning for American Saw & Mfg. Co. The software requires remaking the entire plant to achieve dramatic savings. » 40

ROAD WEARY?

Skilled IT people often have to go where the trouble is — sometimes several days per week. How do you handle a tough IT job made tougher by a heavy travel schedule? We asked a crop of heavy-duty IT travelers for tips on how to handle the road — with ease. » 53

AUTOMATING METERS

Electric utility Enron thinks it can save \$1 billion over 11 years by having Computer Sciences Corp. remotely handle meter-reading for Enron's commercial customers. With the deal, CSC gets a foothold on a market it thinks will explode under deregulation. » 41

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A DAY IN A TOP LEADER'S LIFE

WE FOLLOWED IT veteran Scott Farr (above) for a day on the job to see what it takes to be a top project manager. He navigates Y2K fixes, staff shortages and on-the-job politics to keep his New Hampshire medical center online. See how he makes it all work.

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TIANANMEN ACTIVIST TURNS SOFTWARE ENTREPRENEUR

Nobel Prize-nominated dissident wants to build Web site of student interests

BY ANN HARRISON

SOFTWARE entrepreneur Chai Ling helped lead the student protest at Tiananmen Square in 1989, then lived in hiding for a year before escaping to Hong Kong — nailed inside a wooden crate. Nine years, two Nobel Peace Prize nominations, and one Harvard Business School degree later, she's trying to return to China, with an e-commerce venture designed to create a student community online, out of reach of the tanks.

Jenjabar.com, her company in Cambridge, Mass., has developed a Web-based intranet application that aggregates information for college students and professors. It organizes information on class schedules, news feeds and other information chosen by students and posts it on a password-protected, personal Web site that also provides e-mail to the remote user.

The tool is being used by the Boston College Carroll School of Management. Ling is trying to partner with Internet service providers to offer content aggregation and hosting services to Chinese universities.

Q: Do you plan to go back to China?

SNAPSHOT

Web Attacks

Has your Web site suffered unauthorized access or misuse within the past 12 months?



A: I am looking forward to going back to China in the next four or five years when this generation of leaders leaves. The next generation of leaders will be much more open-minded. Back in 1989, when [President] Deng [Xiaoping] made the decision [to send troops into Tiananmen Square], it was such a tragedy because he did not understand profound changes in society.

Our generation had nothing to do with the Red Guard or the cultural revolution, but we didn't understand that. There was no free flow of information to let him know and appreciate the fruit and success of recent reform. That created tragedy in China. We hope that will be the last tragedy.

We hope that with information flow, they will be less insecure about losing control, and individuals will have more power and freedom.

Q: What can you tell us about doing business in China?

A: The biggest thing is that you have to negotiate with the whole institution, the whole system. They don't have a rule of law, so it is very difficult to do business in China and feel that property rights and intellectual property rights are protected. Every year, Microsoft loses a billion dollars because of software piracy.

The Chinese government likes to force people to do joint ventures with China and the Chinese Communist Party. I've heard horror stories about this kind of practice. The Chinese Communist Party takes all the money and sets up competing factories in the exact same business where they can take that technology and the patents and have all the control.

There is risk to doing business in China. But there is an effort to push the Chinese government to open up the system and do two simple things: free



DISPLAYING THE FAMOUS SHOT of an unarmed Chinese man facing a line of tanks, Chai Ling is also fighting for freedom in China

the media and create a rule of law. [That way, Chinese markets will be more attractive to] foreign companies.

Q: Why did you found Jenjabar.com?

A: I felt there was no real network to support college students. Before, there were geographic, decision-making and bureaucratic barriers. Now, the Internet offers a chance to build this global network. Intercollegiate relationships can be [global] relationships.

Q: Is the Chinese government controlling students' access to the Internet?

A: Oh yes. Right now, they are monitoring all the access to the World Wide Web and who's using it to do what. But the Internet is much more powerful, and they should give up and let the information flow.

Q: Do you think the more opportunities people have to communicate online, the more difficult it will be for Chinese authorities to monitor information?

A: Yes. Absolutely. If 1.2 billion

people are all online, they are probably going to have a hard time doing that. But it still costs a couple of dollars to access [Internet provider] services on an hourly basis and for most Chinese, their average monthly salary is \$15 to \$20.

So that is a substantial amount of [their] income to get access to information, and they are being monitored. So we want to give away tools and find an [Internet provider] that will work with us to bring effective access.

Q: Many people in the U.S. first access the Internet at university. Do you think that will be the case in China?

A: Yes, that is exactly why we wanted to provide tools for the college market. The kids are well-educated; they are Web-savvy; they are more used to using the Internet as a new medium; they trust it more. I want to provide applications and channels to help them organize their education and build communities and build friendships and stay connected even when they leave college.

Whatever they want to achieve, they will be part of the larger network and stay there for a lifetime. That's our commitment to users. ■

Companies Take Personal Approach to Net

Tools tailor response to each customer

BY JULIA KINO

Two companies have announced software and services designed to make selling on the Web more personal.

For \$4,000 per month, New Channel Inc. in Redwood City, Calif., transparently monitors customers' behavior on companies' Web sites, collecting data that lets those companies develop more-targeted sales and marketing programs. A New Channel applet sits on the Web server, monitoring user activity and funneling information about visitors' behav-

ior to data collection servers located at New Channel.

The service also lets customer-service representatives interact personally with customers — via text-based chat — as visitors peruse a Web site. For example, a service representative might ask customers looking at fall-blooming garden plants if they also want detailed information about companion plants that bloom in spring.

Consolidated Freightways in Menlo Park, Calif., uses the technology to help online customers as they work their way through a set of complex rates and schedules, said Joe Schillaci, vice president of sales. Before, online customers

clicked an on-screen "call-me" button if they had questions.

Newark, Calif.-based iLux Corp. also bills its Suite 2000 software as a Web-based marketing tool. Among other things, the software captures and stores data about a customer's current Web-site visit and combines it with data from that person's previous visits.

That data can be merged with data about that customer's catalogue-buying behavior to give companies a comprehensive view of customers who buy their products via multiple sales channels. Pricing for the enterprise iLux Suite 2000 software begins at \$30,000 for an NT version. The software also runs on Solaris machines. ■

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USERS MIXED ON RULES TO LIMIT Y2K LIABILITY

Some say damage cap unfairly protects companies that deliberately stall work

BY PATRICK THIBODEAU
WASHINGTON

A REPUBLICAN LED drive in Congress to set limits on year 2000 litigation — is getting mixed reviews from information technology professionals.

On one side is Lisa Bender, the information systems manager at Falcon Plastics Inc. She believes the legislation — which sets a 90-day cooling-off period before litigation can commence — will encourage supply-chain partners to resolve problems.

"I want people to work on my fixes rather than [be] preparing for litigation," Bender said. "I think it will help in getting these fixes faster." The Brookings, S.D.-based company makes custom plastic parts for automotive, medical and other industries.

But Leon Kappelman, head of the Society for Information

Management's Year 2000 Special Interest Group in Chicago, said limiting liability is wrong and helps companies "who dragged their feet on getting Y2K work done."

Those companies, Kappelman said, "will be rewarded for their dishonesty, mismanagement or negligence while those who took care of their Y2K business will get stuck with the bills" of repairing year 2000 problems.

Common Ground

Senate Commerce Committee Chairman John McCain (R-Ariz.) and Sen. Ron Wyden (D-Ore.) are the leading proponents of the legislation. In an effort to win White House backing and Democratic support, the senators last week dropped some of the more controversial provisions of the legislation, punitive caps and protections for corporate officers and directors, but kept the

cooling-off period. The House may seek other changes.

The legislation is supported by many industry trade associations and insurance groups.

"Once a lawyer gets involved, you don't have an opportunity to work things out," said Jan Amundson, general counsel of the National Association of Manufacturers in

JUST THE FACTS

Congress Acts

Congress is considering plans to limit Y2K liability. Key provisions include:

- Anywhere from a 30- to 90-day cooling-off period before litigation can commence. The intent is to encourage remediation before going to court.

- The leading proposal in Congress would cap punitive damages for firms with fewer than 50 employees. There would be no cap for larger firms.

- Users have a duty to mitigate any potential year 2000-related loss. If a user has no contingency plan to deal with a supply chain interruption, for instance, it could hurt a compensation claim.

Washington Congressional action is expected this month.

Estimates on year 2000-related legal costs vary greatly, but most are many millions of dollars. Just over 60 year 2000-related lawsuits have been filed so far in the U.S., most seeking compliant software from vendors.

Many law firms have established Y2K practice groups to handle potential litigation.

Walter Andrews, a partner in the Year 2000 Practice Group at Wiley, Rein & Fielding in Washington, said his firm is helping companies protect themselves from litigation by conducting legal audits, determining what their potential exposure may be and reviewing contracts.

Some states, such as Colorado, have also implemented liability-limiting legislation. Federal legislation would preempt those efforts, setting a single national standard. Such a standard would help large companies operating in multiple states, said Dale Vecchio, an analyst at Gartner Group Inc. in Stamford, Conn. ▀

Companies Optimistic in Y2K Filings

Airline, products company on track, according to SEC

In recent filings with the Securities and Exchange Commission, Continental Airlines Inc. and Procter & Gamble Co. expressed little concern about their year 2000 readiness. One company cited outsourcing as the reason behind low remediation costs.

Here are details from last week's filings with the SEC:



Continental Airlines Inc., Houston

Project started: Late 1996.

Systems to be evaluated and fixed: Unspecified internal and third-party systems.

Status: Expects fixes to be done by June.

Partners: The airline is visiting and talking to its major suppliers, vendors and governmental agencies such as the Federal Aviation Administration.

Contingency plan: Now being updated, with revised plans expected by September.

Cost: \$16 million to \$18 million (\$6 million spent as of March 31). The relatively low cost is due to substantial outsourcing and because many systems were replaced when the company came out of bankruptcy in 1993.

Procter & Gamble Co., Cincinnati

Status: Expects the required changes to critical systems to be made by June. As of March, critical manufacturing, operating and control systems were 96% complete. Other critical systems were 98% complete.

Testing and certification of those systems is expected by Dec. 31.

Costs: Expected to total approximately \$100 million, of which 75% has been spent to date. ▀

July Could Be a Hot Month for Failures

Report predicts breakdowns to occur in phases, ebb at year's end

BY KATHLEEN OHLSON

This July, not January, is the month to watch for the next big wave of year 2000 failures, according to a new Gartner Group Inc. report.

"The biggest [misconception] is when the failures will occur," said Lou Marcoccio, Gartner's year 2000 analyst in Stamford, Conn. The Gartner report estimates that only 8% to 10% of year 2000-related breakdowns will occur at the end of December and the beginning of January, he said.

Failures will begin in phases, first in July, as some companies enter their new fiscal year and face date issues that haven't been fixed or were fixed incorrectly, Marcoccio said.

By October, the number of failures should increase as sys-

tems that forecast the first quarter start to have errors and an additional one-third of companies enter their new fiscal year, he said.

A little more than half of all eventual failures will hit by the end of the year, and the failure rate will remain way up there for three quarters of 2000,

SNAPSHOT

Competitor Comparison

How the top three general merchandise retailers are doing on their year 2000 work:

	All Miss	Less	None
Fortune 500 rank	3	15	21
Cost of January	\$6M	\$30M	\$51M
Estimated costs	\$27M	\$65M	\$75M
Home	Final testing scheduled for October	Expect full compliance by November	Integration to be done for rest of year

SOURCE: GARTNER'S LATEST 10-4 FLAMES WITH SECURITY AND EXCHANGE COMMISSION

when [failures] start tailing down," Marcoccio said.

Meanwhile, software vendors aren't pulling their weight, he said. Of all commercial packaged software, 80% isn't year 2000-compliant, down from 88% two quarters ago, he said.

More disturbing is that 6% of software stated to be compliant is in fact not because patches and updates are thrown together with little concern for quality control, Marcoccio said.

That finding is borne out by New York-based software firm Cap Gemini America, which studies the year 2000-readiness of various applications for clients. It has found that 10% to 15% of Y2K-ready packaged applications contain an average of four or five bugs per program. ▀

Michael MacMillan, o reporter for Computerworld Canada, contributed to this report.

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MANUFACTURING

FLOW APPROACH TO CUT TOOL-MAKING COSTS

But it requires major overhaul of plant

BY CRAIG STEEDMAN

FOR AMERICAN SAW & Manufacturing Co., build-to-order flow manufacturing is the cutting edge that's expected to help slash its production cycles and inventory costs by 50% or more.

Those potential benefits are pushing American Saw to reorganize its entire plant in East Longmeadow, Mass., to the flow approach, which replaces traditional manufacturing set-ups of stand-alone departments with integrated production lines that schedule work only when orders are placed.

But preparing for the switch, and the installation of packaged software that supports flow techniques, is requiring more than a year of work devoted to redesigning the company's plant, putting together a transition plan and retraining factory workers.

The transition is expected to take another six to nine months after it starts this fall. "There's a lot of equipment that's going to have to move, and we need to sequence it properly so we don't put ourselves out of business," said project manager Tom Demers. That's the way it usually

works with flow systems, which prompts many manufacturers to start more conservatively with flow pilots on one or two production lines [CW, Dec. 4].

Companies often start to see "dramatic" inventory savings in a matter of weeks, said Dave Monroe, an analyst at Plant-Wide Research Group in North Billerica, Mass. "But you literally have to re-create your plant," he added.

American Saw, a \$100 million maker of saw blades and hand tools, is switching to flow in one fell swoop as part of an installation of Oracle Corp.'s enterprise resource planning applications. Finance and purchasing are due to go live next

month and will be followed in October or November by Oracle's year-old flow module and its inventory and materials management software.

Looking Ahead

The project has twin goals: cutting costs and making American Saw more responsive to customers. A full payback could take five years, said Demers, a former finance manager who declined to disclose the firm's total investment.

But the company expects to start getting "significant" inventory reduction benefits from the flow piece just three to six months after finishing the rollout next spring, he said. Jim Holston, a manufacturer

ing manager who's leading the flow rollout team, said the anticipated inventory savings should also reduce the floor space needed to meet current production levels by up to 20%. That will free up room so the company can grow without having to build a new plant.

But designing the new production lines "has been a major effort" involving about 25 business managers, who started on the layout last September and are just finishing it now, Holston said.

Creating a detailed plan for the changeover could take another two to three months, Demers said. Another big issue is training production workers to handle multiple jobs — a typical requirement of flow setups.

"This is going to change things a lot on them," Demers said. "We don't kid ourselves there. We're going to have to continue to ride herd on that for some time." ▶



This IT manager is monitoring capacity in Chicago.

This IT manager is paying bills for Dallas.

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UTILITY OUTSOURCES BILLING, METER-READING, MAY SAVE \$1B

CSC sees Enron Energy deal as entry into gas and electric market

BY JULIA KING

THREE'S \$2 billion to be made annually in the deregulated gas and electric meter-reading and billing business, and Computer Sciences Corp. is looking to grab its share early on.

late last month, the \$30 billion information technology services company in El Segundo, Calif., made its first move, acquiring the back-office billing systems and more than 300 employees from Houston-based Enron Energy Services.

In return, Enron became CSC's first customer for outsourced meter-reading and

billing services.

The deal calls for CSC to take over reading meters and processing bills for Federal Express Corp., Ocean Spray Cranberries Inc. and Enron's 1,200 other large, geographically dispersed commercial and industrial customers. It's also expected to save Enron more than \$1 billion over the next 11 years.

That's because Enron will no longer have to consolidate energy usage information from more than 3,000 different U.S. utilities to present its own nationwide commercial customers with a single bill; CSC will do it for them. The compa-

ny will also do it for other big energy companies that enlist its services as they're deregulated on a state-by-state basis.

"The reason we outsource billing is not that we don't understand billing, but because of the complication inherent in it," said Enron spokeswoman Peggy Mahoney. "Our core business is energy, not billing."

Billing, meanwhile, represents a gold mine to CSC. "For every city or region where deregulation occurs, companies will need billing, meter-reading and data-collection systems," said Mike Beebe, CSC's partner in charge of energy markets. He declined to specify what CSC will earn from the Enron deal.

About 20 million of the 200 million U.S. commercial and residential utility meters have been deregulated, CSC said it expects the remaining 80% to

JUST THE FACTS

Highlights of the CSC/Enron business-process outsourcing deal:

- Enron projects \$1.1 billion in savings during 11 years

- 320 Enron employees and contractors transfer to CSC

- CSC acquires Enron's back-end billing systems and other IT assets
- A CSC enters the \$20 billion-per-year energy services market

be deregulated by 2006.

Between now and then, CSC plans to partner with utilities or other companies that acquire ownership of customers' meters. Eventually, its business-process outsourcing services will include reading those meters electronically, processing the data and presenting electronic bills to both commercial and retail customers via the Internet.

Beebe said he expects CSC to provide Net-based bills to Enron customers within a year.

Eric Blantz, an analyst at Dataquest in Mountain View, Calif., said the Enron deal indicates that CSC intends to expand its outsourcing services well beyond traditional IT services, such as maintaining applications and running data centers. "This is a major first move [on CSC's part]," Blantz said. "This deal with Enron shows the scope of services CSC is trying to move into." ▶



This IT manager is rerouting calls from Boston to Phoenix.

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STOPPING THE VENDOR END RUN

IT vendors will sometimes go over your head to score a sale.
We look at several ways to thwart their tactics

By ERIK SHERMAN

PAUL MUELLER, vice president of communications technology services at trucking giant Schneider National Inc. in Green Bay, Wis., had just informed a vendor that it didn't make the cut.

Instead of getting on with business, the disgruntled supplier sent a letter to Schneider National's CEO, admonishing Mueller for his decision. Of course, Mueller had to address the issue, but the technique backfired.

"Suffice it to say we never did establish a business relationship with that vendor," Mueller says.

He was another target of a vendor end run, which happens when a salesperson in pursuit of an order is turned down by a middle-level information technology manager and goes over the manager's head to a hopefully more pliable executive. Mildly irritating at best, disruptive at worst, this technique is unlikely to disappear any time soon. But there are steps companies can take to minimize the problem.

Making the Sale

End-run tactics are many and subtle. Some salespeople call a CEO, get pointed to IT by a secretary and then tell a technical manager that the president asked them to call.

A marketing director at a network integration firm, who asked to remain anonymous, has seen vendors that lose out during the request for proposals process call the CEO or chief financial officer to withdraw their bid, decrying an "unfair" process. Their hope is that the ensuing trouble will result in a more favorable decision.

But most end runs happen on cold calls, because few suppliers will risk established relationships. "They'll try me. If that doesn't work, they'll try

the chief financial officer; they'll try the CEO," says Ken Brame, CEO at catalog retailer Service Merchandise Co. in Brentwood, Tenn. Brame cites "hot topic of the day" vendors — like outsourcing firms and e-commerce companies — as the worst offenders. "They're always trying to use that leverage [of a popular topic] to get their foot in the door; that they have a magic solution," he adds.

The pain of end runs isn't unwanted solutions foisted upon the unwilling so much as the hours stolen from busy days as employees defend technical decisions. And then there's the personal insult of IT being treated as secondary by senior executives who buckle under.

"I just see an awful lot of

wooding going on," laughs Maribeth Anderson, manager of technology at First Chicago Mercantile Services in Chicago. "I want to see some more wooing for me. I'm the one who has to buy in to the technology solution."

Ironically, Mitchell Parker, regional sales manager at a Web software vendor, thinks end runs are a misapplication of something that's important to both vendors and IT. Many purchases require several sign-offs, so both sides must cooperate to secure necessary authorizations.

"People buy from people they like," Parker says. "If you just start calling high [over the head of your contact], you're not going to get a relationship when it's over. The odds of get-

ting a sale at that point are even less than they were before."

Setting up Barriers

The best defense seems to be creating a corporate culture that encourages cooperative behavior from vendors and that reinforces procedures for evaluating technology. Schneider National, for example, has strategic relationships with vendors, including written core business principles and a biannual supplier conference, which discourage end-run sales tactics. Boston publisher Houghton Mifflin Co. creates a coordinate front via monthly managers meetings and an architectural group that sets standards, so word gets around about vendor activities.

"If a large vendor comes in, we're usually aware of it within 30 days that they're talking to someone," explains Mark Mooney, Houghton Mifflin's chief technology officer. In addition, management insists on referring initial vendor inquiries to the appropriate IT personnel.

For those times when a salesperson gets around the in-

stitutional barriers, some managers keep discouragement tactics up their sleeves. Brame has a collection of vendor coffee mugs so that when he meets with an offending salesperson, he can walk in with a competitor's logo.

Anderson insists that vendors be on an approved list for Bank One Corp., First Chicago's parent. Getting through the screening process to be added to that list is arduous, involving reviews by legal and purchasing staff to ensure that the company can live with any contract. Requiring the screening for any vendor is sensible management for Anderson anyway, but it also carries the added advantage of discouraging the overly persistent.

"If they really want to be there, they have to go through

I want to see
some more
wooing for me.
I'm the one
who has to buy
in to the tech-
nology solution.

MARIBETH ANDERSON, FIRST CHICAGO MERCANTILE SERVICES

the process. They either get on the list and call me back after a while, or I don't bear from them again," Anderson says.

Mooney receives up to 30 calls per day from vendors, many trying to go beyond the people who work for him, so he usually has an assistant answer his phone.

And the truly persistent should beware, because CEOs may take revenge. Mooney remembers at a previous job a mainframe vendor insisted on meeting with the CEO, the type of person who wouldn't hesitate to teach a vendor a lesson. "After a two-hour presentation, the CEO told the [vendor's] sales group, 'You have to talk to my technical people,'" he says.

Sherman is a freelance writer in Marshfield, Mass. Contact him at esherman@reporters.net.



IF AN IT VENDOR'S BRASH SALES REP wants to pitch Ken Brame of Service Merchandise, Brame may be sipping from a coffee mug embossed with a competing vendor's logo.



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BUSINESSOPINION

PAUL A. STRASSMANN

BRIEFS

Gas Company Outsources

A unit of Tulsa, Okla.-based Williams Cos. has signed a \$20 million, multiyear application outsourcing agreement with Kainos Inc. The four-year deal calls for Boston-based Kainos to support Williams Gas Pipeline's customer service and rate systems. Kainos will use performance metrics at four Williams sites to measure work volume, quality, cost, cycle times and customer satisfaction.

\$7.5M Pact for App Maintenance

Schreder Investment Management Ltd. awarded a \$7.5

million, multiyear application maintenance outsourcing contract to Bifieldsoft Corp., an information technology services company in Clearwater, Fla. The new contract follows a previous three-year agreement under which BIF performed year 2000 remediation and user conversion work for Schreder.

Insurer Automates

Mastech Corp. in Pittsburgh has said it's implementing Statek Systems Inc.'s automated sales software at Country Companies, a Birmingham, Mich.-based insurance company with about 1,200 agents nationwide. Mastech said it expects the installation of Country's customer call centers to be completed by next March.

NEW REPORTS

ERP Services

Services represent 50% to 70% of the total cost of an enterprise resource planning (ERP) implementation, compared with software licenses, which make up 20%, according to Datapoint.

In a new report titled "ERP Software Vendor Profit-oriented Services Provider or not?" the San Jose research firm outlines what profit-oriented services the major ERP companies are offering as well as those of their competitors.

The report costs \$1,295.
www.datapoint.com

Handheld Apps

Although there are more than 13,000 developers creating software for 3Com Corp.'s Palm OS and Microsoft Corp.'s Windows CE, many of them developers are small companies that have landed on the handheld market, according to "Software: What's Hot for Handhelds," a report from International Data Corp. in Framingham, Mass. The handheld market is still at least a year away from attracting major developers, the report says.

The report costs \$2,500.
www.idc.com

Worldwide Spending on Training

What corporate worldwide will spend annually on IT training. Projections in billions of dollars

Year	1994	1995	1996	1997	1998
Total	\$40.5	\$44.5	\$49.5	\$54.5	\$60.0
North America	\$16.5	\$18.5	\$20.5	\$22.5	\$25.0
Europe	\$12.5	\$13.5	\$14.5	\$15.5	\$17.0
Japan	\$11.5	\$12.5	\$13.5	\$14.5	\$16.0

SOURCE: COMPUTERWORLD SURVEY, INC., CARLSBAD, CALIF.

IT paradox number

THE IDEA THAT SOMETHING is amiss with IT investments dates back at least 15 years to when Nobel Prize-winning economist Bob Solow quipped that computers are everywhere except in the economic statistics.

Hence, the productivity paradox: the inability to convincingly demonstrate that our investments in technology have resulted in measurable productivity improvements.

Much has been written about the phenomenon. But nobody has yet offered a number that would help executives define whether their own company's productivity paradox is small or large. I'd like to introduce a way, I call it the IT paradox number, the difference between a firm's actual computer hardware spending and what Moore's Law would predict it to be.

Moore's Law states that the number of transistors that can be crammed into a semiconductor chip doubles every 24 months without increasing the costs of making it. That means that electronics costs can decline 33.3% annually.

The U.S. Department of Commerce settled on an average decrease in "IT costs" at 17.5%. It applies that number to economic calculations such as the gross domestic product and the cost-of-living indicators.

Hence, the formula for calculating one's own IT paradox number: It's your company's IT budget today, compared with what it could have been if you had previously bought your computing capacity every year for 17.5% less.

If you're alarmed by your company's paradox number, I can offer some consolation: You have company.

I have been tracking corporate IT costs for a long time. U.S. corporate computer hardware costs increased from \$67 billion in 1990 to \$153 billion last year. If Moore's Law would have delivered to its full potential, the 1998 IT budgets would have bought \$58 billion worth of computing power. Therefore, the U.S. corporate IT paradox number now stands at \$405 billion, the difference between \$58 billion and \$153 billion.

The objections to such a calculation will come from those who claim that computers now do much more, and therefore the additional spending is justified.

I'm not so sure. If CIOs can explain to their executive committees that they delivered 833% more computer-induced business capabilities

(\$558 billion divided by \$67 billion) since 1990, I will gladly acknowledge that Moore's Law applies not only to semiconductor manufacturing, but also to IT budgets.

What then, explains the differences between the potential gains of Moore's Law and the harsh realities of IT spending?

1. **Bloated software.** Whatever performance gains one gets from electronics manufacturers is chewed up by software that compensates for its inadequacies by gobbling up all the computing power it can get.

2. **Excessive support costs.** Hardware maintenance and support costs are included in the reported hardware budgets. The total cost of ownership of a desktop computer now includes as little as 10% for hardware depreciation. Most costs are for expensive support labor to keep the hardware alive and to tranquillize unhappy customers.

3. **Misguided systems engineering.** Corporate hardware assets are put in place with hardly any configuration management, safeguards against early obsolescence or provisions for future growth. The hardware landscape of most corporations looks to me more like a shantytown than a metropolis.

The consequences of those effects generate the paradox number. Hardware is acquired and junked for no reason other than IT's inability to cope with what it already has. What appears as inexpensive hardware is purchased (or outsourced) as the preferred solution to the software bloat, uncontrolled support costs and improvised systems engineering.

The IT paradox number can be calculated by anyone and for any corporate computer budget. It may be a good idea for a corporate CIO to know what this number is before some smart chief financial officer brings it up next time budget cuts are on the agenda. ■

Strassmann (paul@strassmann.com) is still looking for the one organization that can explain its IT spending by applying Moore's Law.

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TRUSTING

THE

WHEN NETWARE International Bank guaranteed 20% interest on savings and near-prime loans, the North Carolina Office of the Commissioner of Banks started getting inquiries. Lots of them. A little research proved that Internet bank was no bank at all. It had no license. No recognition by any regulatory agency. And no deposit insurance, despite its claims to the contrary.

"Another catch: It cost you \$500 to join the bank, then you could solicit others to join and get a portion of their fee," says Otis Meacham, the state's deputy commissioner of banks.

When the FBI, Internal Revenue Service and U.S. Postal Service raided Netware's small office in Mooresville, N.C., they seized \$1.2 million in deposits to another bank plus a plane, boat and car purchased with deposits from unsuspecting consumers. In February, Netware proprietor David Allen Bear pleaded guilty to unlawful sale of unregistered securities and now awaits sentencing, which could include up to five years in prison and a \$250,000 fine.

Currently, warnings on some 45 Internet banks are posted on the Federal Deposit Insurance Corp.'s (FDIC) Suspicious Internet Banking Web page (www.fdic.gov/consumer/suspicious).

Bad Reputation

The emergence of such Internet banking and securities scams causes legitimate Internet banks to fear for their reputations, says Paul Raines, vice president of electronic security at the Federal Reserve Bank of New York.

"Banks are pouring hundreds of millions of dollars into establishing a Web presence," but it takes only a few fraudulent institutions to drive customers from sites of above-board banks, he asserts.

Of the 10,500 FDIC-regulated banks, 3,000 have a Web site. And as of mid-March, transactions could be conducted at 465 of them, according to FDIC senior policy analyst Jeff Kopchik.

If these banks are to see any signifi-

STEVE KATZ OF CITIGROUP: "The Internet is essentially a securable environment; but it will take a lot of effort."

BUSINESS

NET

A few online banking scams are making the Internet a tough place for many legitimate banks to do business. But industry groups are looking to make the Net more secure. By Deborah Radcliff

cast return on their e-commerce investments, Raines contends, the private sector must move quickly to develop a trusted, universal e-commerce framework and establish a comprehensive Web banking certification program. But that's not easy, says Steve Katz, chief information security officer at \$2.6 billion Citigroup Inc., the New York-based holding company for Citibank.

"The Internet is essentially a securable environment, but it will take a lot of effort," explains Katz, who was responsible for ensuring data security for Citibank's Internet-based Direct Access program. The service, which went online in 1997, allows customers to pay bills, view accounts and transfer funds over the Internet.

Like other early Internet banking adopters, Citibank's system relies on user passwords to identify clients and 128-bit, Secure Sockets Layer browser-level encryption for securing account transactions.

But for interbank transfers and other forms of electronic money to become a reality, a global public-key infrastructure — in which a digital signature is held in good standing between parties at each end of a transaction — must be adopted.

The biggest issue facing banks: Who will manage and validate those digital signatures?

"The technical aspects would have to be enforced through a certifying authority, which could be a banking and/or accounting industry consortium," Raines says.

Two industry consortiums have recently introduced their visions of public-key frameworks built on commercially available public-key technologies, in which banks would act as certifying authorities.

In October, an eight-bank consortium announced plans to form a Global Trust Enterprise for business-to-business banking and e-commerce. The as-yet unnamed, for-profit company is building a network of financial institutions to operate as public-key certificate authorities. The group expects to begin testing its technology next year.

And in March, the Washington-based American Bankers Association (ABA)

introduced a first-of-its-kind electronic signature for business-to-consumer electronic banking in the form of an avocado-and-navy-colored logo, SiteCertain, which is like a Good Housekeeping Seal for Internet banks. SiteCertain is available to any interested bank and is offered as a free service to ABA member banks, which represent 90 percent of the banking industry. Fifteen ABA members are now testing SiteCertain.

Logs a Good Strategy

Raines and others say the logos are a step in the right direction because they give consumers strong assurances that they're dealing with legitimate Internet banks. In the long run, such a confidence mechanism "accomplishes the goal of protecting e-commerce and banking markets from fraud," says Kawika Duguna, the ABA's federal representative for payment systems and technology policy.

In addition, a new ABA-for-profit spinoff, ABAecon, is positioning itself to be a certificate-validation authority for Internet banks and merchants.

A banking seal and certificate validation from the banking industry are the only viable ways to conduct electronic banking and e-commerce with an acceptable level of confidence, contends Ron Starzinski, lead information security analyst at Minneapolis-based financial services, banking and insurance group Luther Brotherhood. He also helped write the Federal Reserve Bank of Minneapolis' security information manual in the early 1990s. "SiteCertain is enlightening because this is a nice application of what a [digital] certificate would look like," Starzinski says.

Starzinski and Citibank's Katz say vendor technology to pull all this together exists. And vendor-to-bank and vendor-to-vendor cooperation is improving, they say. That's evidenced by ABAecon and the Global Trust Enterprise, both of which have teamed with cryptography vendors and public-key authorities to accomplish those goals.

But Raines says efforts are still fragmented as vendors and banks build pieces of this much-needed trust network in separate sandboxes.

"[Banks and vendors] are hitting all

around the issue. One handles privacy, the other, technical configuration and another, certification," he says. "If the banking industry is pouring all these millions into their Web sites, they should protect those investments by having some sort of overall Internet banking certification program."

The pieces that still need to fall into place include technical details like protocol consistency, compliance and a communications mechanism that lets banks and certificate authorities talk to one another, Starzinski says.

The ABA and Global Trust Enterprise need to take a more comprehensive approach to validate certification. The body that oversees the validation of certificates must also have access to lists of expired certificates, he adds. "The big catch is revocation. Certificate authorities don't manage revocation lists. When you're talking about cross-certification, it's problematic figuring out who has live certificates," he says.

Pulling It Together

Although no one was able to offer a time line for deployment of a widespread, trusted Internet banking and securities network, indicators suggest it will take at least another year for the remaining pieces to fall into place.

Luther Brotherhood, which in March acquired a \$22 million, full-service banking thrift, will wait for those issues to be worked out before deploying electronic money and interbank transfer systems over the Internet. Citibank's Katz concurs.

In the meantime, regulators worry about banks exercising due diligence when putting out any new electronic products, Raines says. "We want to make sure this electronic-money system isn't easily defrauded. If fraud happens, that means a reputational risk to the bank," he explains.

Reputation, Katz says, is as much a commodity as a bank's deposits. "Banks have two products: money and trust. The key one is trust," he says. "Regardless of the medium, our role is to make sure that trust commitment is met." ▶

Radcliff is a freelance writer in northern California.

Get Smart

"If it looks like it's too good to be true, it probably is."

So says Kelly Robinson, bureau chief of financial institutions at the U.S. Department of Justice. In May 1997, his department ordered European National Bank, a 10-year-old Internet bank based in America, to cease operations. It did. But not before transferring nearly \$5 million in consumer deposits to Russia that have yet to be recovered, according to a *Bloomberg News* report.

A Internet search goes a long way in protecting consumers from fraud, says Jeff Kopisch, senior policy analyst at the FDIC. A legitimate Internet bank will post its street address and phone number on its Web site. If you can't find the address, be wary, he says. Also, check the Web address. Secondary addresses like [www.homepageprovider.com/bsbank.html](http://homepageprovider.com/bsbank.html) as opposed to www.bank.com are obvious heffs, he adds.

Still have questions? Check the FDIC's consumer site (www.FDIC.gov/consumer.html) or the Office of Thrift Supervision.

Banking on Online Banking

Jupiter Communications predicts near-quadruple growth in online banking from 1997 to 2002.

YEAR	1997	1998	1999	2000	2001	2002
1997	4.0M*					
1998	8.0M*					
1999	9.0M*					
2000	12.0M*					
2001	14.0M*					
2002	17.0M*					

*PROJECTED SOURCE: JUPITER COMMUNICATIONS INC., NEW YORK

Online Links

- To check out what organizations are doing in internet banking and securities infrastructures, visit these sites:
- Global Trust Enterprise: www.hots.com/home/hots/GTE.html
- American Bankers Association: www.aba.com
- Investment Company Institute (mutual funds): www.ici.org
- Securities Industry Association: www.sia.com



A DAY IN OF A PROJECT

Have your eye on project management as the next logical career move? For a glimpse at what you can expect, take a look at a day in Scott Farr's life By Melanie Menagh

8 A.M. SCOTT FARR'S DAY begins in the conference room for the biweekly year 2000 confab. Farr is project manager for data warehousing at Dartmouth/Hitchcock Medical Center in Lebanon, N.H., a tertiary-care facility and Dartmouth College teaching hospital.

Getting everything to everyone who needs it is a major task. Farr says: "Our job is to figure out the quickest, easiest way to get information about anything — from operating-room costs to results of research trials to news about managed-care changes — to our users, many of whom are not technologically trained. So it has to be user-friendly."

Farr's team also manages the medical school and the hospital clinic, which has five outposts in southern New Hampshire. The empire also includes the Hitchcock Alliance, a consortium of smaller hospitals in New Hampshire, Vermont and Massachusetts.

Jokes and the aroma of coffee swirl through the atmosphere as Connie Durham, Y2K coordinator, calls the

meeting to order and ticks off items on the to-do list. The conference room hums with communication about recalculating vendors, suggestions for ways to get users enthused over testing and advice on tracing errant interfaces. Fortunately for Farr, much of his department already works with year 2000-ready technology, so he's here mostly to help unravel interface entanglements.

9 A.M. THE MEETING OVER, Farr heads back to the hospital, nips into the cafeteria for a cup of java, then moves down the maze of hospital-bright hallways to his section, a central core of cubicles ringed by offices. Farr's desk is pleasant: a view across the lawn to the cafeteria, outdoor scenes on the walls for inspiration, photos of his wife and three sons in decidedly extracurricular surroundings. Oh, yes, and a raft of user manuals, files, reports, trade publications and business books to help untangle current problems and strategize about the three-year plan for the department he's developing.

9:15 A.M. FARR SETTLES IN at his desk and checks through the morning "blitzes" (e-mails), answering them in rapid-fire succession. There are requests from users who want reports, forwarded Web addresses for information about ideas for the three-year plan and queries from the financial folks about the latest request for upgrades.

9:40 A.M. ANYTHING LEFT unanswered is swerved. Farr prioritizes to be addressed later. Farr, who has been at the medical center 16 years, hadn't intended to go into information technology. "Computers were about the furthest thing from my mind," says the 1977 Dartmouth graduate, who majored in math and economics. "A friend was working as a computer operator in a small, local company and got me his job when he left."

After a year, Farr worked his way west waiting tables. But he soon decided to head home, landing a job as a Cobol programmer at a bank in Ver-



PHOTOGRAPH BY GENE KARLIN

THE LIFE CYC CT MANAGER

mont. He moved back to Hanover, N.H., to be with his future wife, who was a technician at Dartmouth/Hitchcock. So he signed on, too, working his way up from programmer to project manager.

10:40 A.M. HIS E-MAILS answered, Farr wades into the paperwork on his desk.

"Coming up through the ranks was crucial to my understanding what's involved in getting the work done here," he says. "I'm still learning; I've got a Unix class at Dartmouth next week. The politics I've learned more recently as a project manager."

There are nine people on his team. He reports to the CIO and the medical director and sits in on meetings with the CEO and chief financial officer.

There are several ways in which working for a health care facility is unique. "Security is crucial," Farr says. "When someone needs a report, it's done under strict guidelines about what we can release and to whom. We really have two components of customers: The financial and administrative: That's the easy part because their data is designed around numerical data. Then there's the clinical side, designed around text-based documents. That's much tougher to manage."

10:50 A.M. THE PHONE JANGLES. It's an SOS from one of the medical center's satellite facilities in Springfield, Vt., which is trying to con-

nnect with the reporting scheme — but can't. Farr goes into troubleshooting mode, checking through the programs, sniffing for snafus.

11:15 A.M. FARR TESTS FOR glitches in the software, running through the many possibilities. Coming up empty, he considers who in his team could best triage the problem.

The office atmosphere is busy but not hurried. Though Farr says personnel issues aren't his forte, he's had no one leave in two years. "Other departments have had huge turnover and a hard time finding staff," he says. "Maybe some of it's my style. I try to be flexible about working part time or from home, taking vacations when you want.... But I think it's mostly the work. We've developed our own applications, and we deal with different applications across the organization."

He says keeping the staff happy "is a huge priority" for many reasons, not the least of which is the difficulty of luring topflight people to a relatively rural area about two hours northwest of Boston. Then there are the salary constraints posed by belt-tightening in health care.

11:25 A.M. FARR CALLS IN Carol, a senior programmer/analyst who handles reports, for a conference call on the Springfield problem. Then he heads down the hall

to Ernie LeBlanc's office. Farr wants to get the director of technical services' input on a proposal for a few thousand dollars' worth of Windows NT server hardware, an SAS Institute Inc. database and Kerberos authentication to let business managers check on detailed analyses of rates and revenue.

12:45 P.M. FARR SPENDS a good part of his day cruising e-mail.

"I do most of my communicating via e-mail," he says. "Otherwise, I like to go to someone and talk to them off the cuff. I do it also with users — just cruise up to the department and ask them how they're doing, if they're doing anything new. That's how I get my tech support: I cruise down the hall, grab a couple of staff and get their ideas." To illustrate his point, he recalls Eliot Marcus and Dan Libby, senior programmers/analysts, to get their thoughts on the proposal, listening intently to their advice. He's satisfied that he made the right call on this one.

1:25 P.M. BACK IN HIS OFFICE with still hovering, Farr checks in with the on-call consultant, systems administrator, and they finally unravel the mystery: Software must be tweaked to correct the expiration date. While in the neighborhood, Farr checks on the latest e-mails.

3:15 P.M. ANDREW BETTINGER, medical director of clinical computing, drops in to discuss the new tech proposal in greater detail. "Communication skills are critical in this job," Farr says. "We want everything we present to look positive — especially when we're asking for money from the VP." For emphasis, he raps on the desk with a wooden back scratcher that, dangling dexterously between his thumb and forefinger, also does duty as a pointer and an eye-to-hand coordination tool.

4:35 P.M. WITH SALAD and milk in hand from the cafeteria, Farr heads into the late afternoon with another e-mail check, then starts in on a project: "I work on these projects at the end of the day, when it's quieted down. I still write reports myself."

5:30 P.M. BY THIS TIME OR 6 P.M., on a typical day, Farr has usually answered all the emergency e-mails, organized the important ones to answer the next day, prioritized the papers on his desk and is ready for a final cruise around the area to look in on stragglers or to do a security check if he's the last out the door. "The best part of this job," Farr says, "is giving users a quick solution to their info needs. You also get to see the big picture, and that can help direct some of our efforts." ▶

Menagh is a freelance writer in Maple Corner, Vt.



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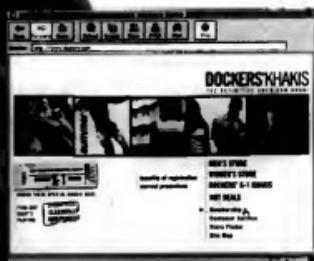
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TIPS FOR THE WEARY TRAVELER



ELLEN WATSON

By Steve Alexander

IT travelers can be a hardy bunch: living out of a suitcase, working under strained conditions and constantly on the move. It's not an easy life — unless you know a few tricks of the traveling trade. For those less travel-savvy, we asked some frequent information technology travelers for tips on flying, staying in touch, living in unfamiliar cities, working, maintaining family life, using spare time wisely and dealing with stress.

Air Travel**Reduce Stress**

Make travel to and from work sites as easy as possible, says Tim Snyder, president of Productivity Innovations, a Bozeman, Mont., contracting firm. He has spent half of his time on the road for nearly seven years. "I go to the airport early and have a place to go, such as an airport club, to either relax or do work. It brings the stress levels down quite a bit," Snyder says.

He also warns against scheduling flights too close together. "I won't do a connecting flight in under an hour because the chances of not making the connection are growing."

Travel Light

Get yourself some wheels, advises Melinda Resser, associate director of IT at Chicago-based Second Harvest National Food Bank Network, one of the largest charitable hunger-relief organizations in the U.S.

She travels approximately half the time as part of an automation project designed to tie together 188 U.S. food banks. "Have a suitcase with wheels and a computer case on wheels, so you don't have to carry either of them," she says. "Never take a hardcover book, because it weighs too much. Read a paperback, and then pitch it."

Never Check Anything on an Airplane

Lost luggage wastes time, says Bill Goodlett, manager of information resources for the advancing markets group at Brown-Forman Beverages Worldwide in Louisville, Ky. He travels internationally once each quarter for the firm, which produces liquors such as Jack Daniel's Tennessee Whiskey and Korbel California Champagnes. "My luggage has been lost, and I've been several days without any of my things from home," he says. "I can't afford that downtime. So I've learned how to limit my packing to one clothes

Tip, page 54

“
Talk to your clients; they can tell you stuff about their city that no tourist bureau can.

JESSICA STARK,
DIRECTOR OF SYSTEMS DEVELOPMENT,
DECHERT-HAMPE & CO.

says. "Never take a hardcover book, because it weighs too much. Read a paperback, and then pitch it."

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TIPS FOR THE WEARY TRAVELER

Continued from page 53

bag and one PC bag."

For those who do check their bags, "never, never put the software in a suitcase that gets checked," Resser says. "I had one episode where a staff member packed the software jewel cases in a suitcase, then the suitcase got ripped open, and the jewel cases fell out."

Staying in Touch

Don't Let Your E-mail Hold Up

"I get about 100 e-mails a day. If I do e-mail while I'm on the road, then it doesn't stack up while I'm gone. Otherwise, I waste a day after I return to the office," says David Richey, director of corporate IT at Lockwood Greene Inc., a Spartanburg, S.C., firm that designs and constructs office buildings and manufacturing plants. He travels at least two days each week to visit some of the company's 28 U.S. offices.

For Snyder, e-mail is in, and the cell phone is out. "I live on e-mail, and I manage to correspond with most of the people I work with that way," he says. "I don't have a paper, and I got rid of my cell phone because I decided I didn't need it, and I was tired of getting ripped off for long-distance charges."

Accommodations and Transportation

Avoid Room Service Like the Plague

Traveling doesn't mean you have to eat poorly, says Tim Gallegos, a former integration manager at Albuquerque, N.M.-based Horizon Healthcare Corp., who traveled approximately three weeks per month for two years. "You'd be surprised how fast you can gain weight [ordering room service]," he says. "I always made it a point to eat out somewhere, and to eat healthy."

Gallegos also says it's a good idea to know where to find important free services, such as suit pressing. "Most major suit retailers offer free suit pressing to anyone walking in wearing a suit," he says.

I've met a lot of people on airplanes that I've gotten e-mails from later. I enjoy that, and I've met a lot of interesting people.

BILL BOODLET,
MANAGER OF INFORMATION RESOURCES,
BROWN-FORMAN BEVERAGES

Eat In

Cooking saves time and money. Resser says, "A group of five of us usually stay at a location one to two weeks at a time, with no weekends home," she says. "So we try to get an efficiency meal, so we can cook in the room and don't have to go out every night."

Don't Take the Little Things for Granted

When traveling internationally, it's important to know in advance which hotels have good telephone systems, how well local transportation works and where you can exchange dollars for foreign currency, Goodlett says.

Working Arrangements

Keep It Brief But Busy

"When I go somewhere, I go to work. I work 10 to 12 hours a day so that, instead of spending a week, I can spend three days," Snyder says.

One Hotel Room

Hotel rooms are usually a haven, free of interrupting phone calls, so use them to catch up on work from the office, Richey says.

Work and Fly

Don't waste airplane time, says Jeannine Stark, director of systems development at the Kansas City, Mo., office of Decherd-Hampe & Co., a supply-chain

sales and marketing consulting firm in Mission Viejo, Calif. "I don't ever sleep on airplanes; I've gotten into the groove of using the time to work," she says.

She travels approximately three weeks per month and says she figures that "if you allow a flight to be dead time, it means more work at some other point in your trip where maybe you don't want to do it."

Snyder disagrees. "I'll work on planes, but I also relax on them," he says. "You don't need to work 100% of the time. Make sure your own personal relaxation is a priority, too."

Snyder, always anxious to get her e-mail, is learning which airports have pay phones equipped with connecting jacks for PCs. The Cleveland airport is one of her favorites. "Airports are getting more laptop-friendly," she says.

Family Life

Weekends Sacred

Don't compromise away your weekends, Snyder says. "I miss seeing my wife and my daughters when I travel," he says. "So I have a rule that borders on religion: I'm home on weekends, whatever it takes."

Family on the Road

The people you travel with can form a mini-family, says Stark, who likes to travel with other members of her consulting team. They stay at the same hotel, eat dinner together, work late together and take an interest in one another's activities. "It's a support mechanism that is like a pseudo-family," she says. But she also stays in touch with home. "I try to talk to my husband twice a day when I'm on the road. We talk about mundane things, and it makes where you are feel like home."

Spare Time on the Road

If You Have Time

Snyder goes for modest entertainment. "If I get out of work at about 8 p.m., I eat a little dinner and go to the hotel. Then I like to spend an hour or so reading or watching a movie," he says.

"There is no such thing as downtime

in international travel. If you're traveling from here to Hong Kong or Cape Town, you pack into that schedule as much as you can get done," Goodlett says.

Stark favors being a tourist when you can. "Talk to your clients; they can tell you stuff about their city that no tourist bureau can," she says. "For instance, in Mexico City, I had a wonderful evening going tamale-hopping, which means buying them from the big oil drums the street vendors cook them in. I got to see the Mexico City that the people who live there like to see."

Managing Stress and Loneliness

Know Yourself

Some people just shouldn't travel, Snyder says. "It is a somewhat solitary lifestyle. If you're not emotionally cut out for travel, don't get into it," he says.

Learn to Be Calm

"Since just about anything is a crisis, you have to be able to calmly deal with it," Stark advises. "At this point, it takes an extreme amount of concentrated pressure and frustration to really unbalance me."

I'll work on planes, but I also relax on them. Make sure your own personal relaxation is a priority, too.

TIM SNYDER, PRESIDENT,
PRODUCTIVITY INNOVATIONS

Get to Know Fellow Travelers

"I've met a lot of people on airplanes that I've gotten e-mails from later. I enjoy that, and I've met a lot of interesting people," Goodlett says.

Stark says that when she's lonely, she cheers herself up by thinking about how interesting her job is. "If I were working for some company based in Kansas City, I wouldn't know what I know now; I wouldn't get to mess with different software applications or deal with different manufacturers," she says. "I wouldn't get to learn about different industries, and I wouldn't have as many different projects to work on. I'm OK with traveling if it means I get to do those things."

But she always comes home on weekends, and she and her husband have no children. "I could not do what I'm doing with children," she says. ♦

Alexander is a freelance writer in Edina, Minn.

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Dear Career Adviser:

I'd like to know how to break past the "geezer" barrier. I have more than 20 years of experience and a bachelor's of science from a top school. I have more than three years' experience in very current and desirable skills,

especially Visual C++, Microsoft Foundation Classes, Visual Basic, Java, and HTML. But I'm over 50 and female. I'm not getting any interviews at all. When they say there's a permanent shortage, I curse.

— NOT OVER THE HILL

Dear Ms. Hill:

Although the Internet is based on a 1990s phenomenon, people who are 45, 50 and even older can still be hired at hot technology companies. But realistically, that takes some real doing and a customized action plan.

Remember, most small companies are formed by core teams of MBA classmates who met at school or technologists from larger companies who then broke off to form their own startups. If you're not part of that network, you need to work at developing a solid way in — and not just by sending résumés.

Start hounding professional association meetings where Internet people congregate on a regular basis, get

connected to the executive or venture capital teams, or become a valued contractor or vendor who gets hired in-house. Second, observe the nuances. You must have outstanding skills and understand that medium in the same way your younger counterparts do, with the same energy, values and stamina.

While your knowledge will let you hit the ground running, don't hype how much you already know or your managerial skills; you'll scare off a 25-year-old who doesn't want you commanding his environment. Instead, find a person your own age at that company to whom you can pitch your skills set.

My advice: If necessary, dye your hair, chuck your suit and learn to say "cool," "totally" and "you go, girl!" in full force. And, for example, there are some pre- and post-training requirements if you want free training. After 100 hours of service, employees can access a basic program of online courses covering work in Java, Oracle or

was asked to sign a lengthy contract as a condition of employment, containing, among other standard provisions, a clause that I would be charged for all training and certification and legally obligated to pay those costs back to the company if I decided to leave the company before a period of two years had elapsed.

Is this unusual? How have these contracts held up in court?

— CONCERNED ABOUT CONTRACTS

Dear Concerned:

Here's information that may help. At Robert Half Inc. Consulting (RHIC) in Menlo Park, Calif., for example, there are

some pre- and post-training requirements if you want free training. After 100 hours of service, employees can access a basic program of online courses covering work in Java, Oracle or

Microsoft, including certifications. Graduate-level training with both online and classroom training requires 500 hours of prior service plus your agreement to complete 1,000 hours of post-training work with RHIC (www.rhic.com) clients.

There may be exceptions in your state that you'll need to check out by consulting an employment attorney or your own.

If the employer provides something of value to an employee, the employer generally appears to have the right to collect repayment if the employee doesn't stay through a certain term.

Dear Career Adviser:

I work for a Big 5 management consulting firm as a senior consultant. After 18 months, I'm still trying to find my niche. I'm an IT professional with 12 years of systems development experience (mostly mainframe and some client/server).

My technical skills have been spread thin, and I need to choose a specialty (such as enterprise resource planning, e-commerce and so on).

I have very little management experience, and I'm also uncomfortable managing, but I feel that it's necessary for my advancement. How do I develop-



Linda Goff is an expert in high-tech careers and recruitment. Send questions in at www.computerworld.com.

op new technical skills while continuing to advance in a firm like this without feeling demoted? Which areas of consulting offer the brightest future?

— FLOUNDERING AT A BIG 5

Dear Floundering:

You're right to be concerned. Senior consultant is an entry-level title at a Big 5 firm, and despite your 12 years — plus the 18 months at your new job — you somehow don't seem plugged into the aggressive nature of the Big 5.

The key to knowing how you're doing is to look at your billable utilization, says San Clemente, Calif.-based Susan Cramm, a former Big 8 senior consultant who's now executive coach and founder of ValueDance in San Clemente. Calif. In other words, if you're billable, you're fine. You get to walk in and say, "I want to do this kind of work. Help me do that." You're put on a high-priority path, whether technical or management, because the firms use both.

In fact, a few of the Big 5, like Deloitte & Touche and Ernst & Young LLP, are also creating alternative career paths to partner to retain people who demonstrate technical excellence, motivation and dedication qualities and who also want to take time for family priorities. The immediate task is to see where you stand in this company: Are you a shining star or pigeonholed as second-tier? Then go from there. □

WORKSTYLE BRIEFS

What It's Like to Work at . . . Crutchfield

Interviewee: Jeremy Sackler, application development manager, Company: Crutchfield Corp., a consumer electronics mail-order house (www.crutchfield.com)
Main location: Charlotte, N.C.
IT employees: 25. But a lot of other people's jobs cross over into IT.

Other employees (and others): 500. Green code: Anything functional. In IT, it's mostly Java and T-tickets.

Work day: "We have a lot of flexibility. Some people come in at 8 a.m., some at 10:30 a.m. The day ends when the work is done. We

work a basic, eight-hour day 75% of the time."

Is a security card needed to get into building or office? No. How are your colleagues personalized? "Sometimes there are little paper lights hanging in their cubicles. One time, someone hung fuzzy dice from the ceiling, and that was funny, but we had to take them down. We had to take that down a bit."

"Some people have radios, and we use some Crutchfield gear to amplify the signals [because] we're underground."

Computers: "Mostly, we have Pentium II towers with 12-inch monitors." Most people carry beepers? "At times. We have an on-call rule for after-hours support that rotates." What percentage of staff telecommutes? "We don't really telecommute. We value the interaction in our group a lot — it's a key to accomplishing stuff."

"You have to be able to walk down the hallway and talk to people." Do you have on-site day care? No. Where do IT workers go for lunch? "There are a lot of local eateries. Most people eat out at the building."

Free refreshments: "Yes, hot chocolate, coffee, apple cider. We do eat free meals from time to time." Any other departmental activities?

"Once or twice a year, we go out on a departmental bonding trip. Like miniature golf. Lately, we're looking for golf for later tag."

Vending machines: "Coke and snack machines. One has junk food, and one has single-meal items like shirley-wrapped hamburgers."

Court date: 40 cents.

Little perks: "We get employee discounts on the products — remodeling around east. And we always have an employee of the month company-wide. You get mentioned in the local paper and a reserved parking space for the month."

Would employees feel comfortable addressing the CEO? "Yes, a lot of them really do. Bill [Crutchfield, company founder and CEO] has a really good open-door policy. You can walk in and talk to him about

anything. The whole executive climate fosters an entrepreneurial spirit. If you have a good idea, you can run with it and make a big difference."

Like what? "I've been trying to push some initiatives toward software engineering processes and some [specification] and review processes. All the IT people are interested in that, in losing professionalism."

Quote: "Some challenges are frustrating. But, by and large, I've always enjoyed being here and what I'm doing. We view the other people in the company as our customers, and we try to have strong ties to them. And, we have a great group — we look for well-rounded people, not just coders. We believe a well-balanced employee is a better employee." — Linda Goff

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TECHNOLOGY

USERS: NT 4.0 LOOKING BETTER

Peet's Coffee and Tea adopted Windows NT for its manageability and reliability — two areas where the operating system often gets a bad rap. Peet's move actually makes sense because of improvements in NT and in IT managers' ability to manage it. • 60

ALLCHIN TALKS MIGRATION

Seeking to defuse fears about how hard it will be to migrate to Windows 2000, Microsoft Senior Vice President Jim Allchin promises online support to help corporate customers find and solve compatibility problems. • 60

VPNs ON THE CHEAP...

Virtual private networks don't have to be million-dollar affairs. Discount shoe retailer DSW chose dial-up, 56K bit/sec. modem connections for sales data and e-mail, rather than more expensive frame relay. • 66

... AND AS REMOTE ACCESS

Construction conglomerate Black & Veatch is ahead of the curve in exploring VPNs as a cheap way to communicate with its engineers worldwide. For the most part, IT is waiting for the technology to mature — but sky-high European phone rates make it tempting. • 74

QUICKSTUDY: JAVA APPLETS

They're no longer mere bells and whistles on a Web page. Today, they bring useful applications to your site. • 72

LEGACY LIFE SUPPORT

What to do with legacy equipment that won't go away? Two new products could help IT departments bridge the gap between legacy systems and newer environments such as NT and Unix. • 64

TAKING THE IP PLUNGE

As IP networking gains steam, it will get more expensive stick with venerable SNA. We talk to one company that's making the conversion, insurer American Mutual, about the hassles and the payoff. • 66

EMERGING COMPANIES

Start-up WebCriterica has created a virtual site-scraper named Max that attempts to quantify what has traditionally been viewed as a black art: the value of a large Web site. It's a nifty idea, but it may not offer enough control or analysis to suit IT. • 70

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Flat-panel monitors at NucWest Global Financial Markets in New York install more than 300 3-in.-thick displays to reduce desk space on the trading floor.

FLAT PANELS: SEXY, BUT PRICEY

TO TRADERS ON WALL STREET, flat-panel displays offer a way to squeeze more information onto their desks with smaller footprints. They blend efficiency with beauty — but at a cost. Prices have fallen, but not far enough for most general-business users to justify a move to a \$1,000 display.

76

TECHNOLOGY SOFTWARE

BRIEFS

Informatica Tools

This fall, Informatica Corp. will ship PowerConnect for SAP R/3 and PowerConnect for PeopleSoft access tools. PowerConnect for SAP R/3 will provide access to all SAP R/3 tables. Using PowerConnect for PeopleSoft, users will be able to access all PeopleSoft Inc. objects. Each package will work with Informatica's PowerCenter. Package pricing will start at \$55,000. www.informatica.com

MQSeries Server Ships for SGI's IRIX

Willow Technology Inc.'s MQSeries server for Silicon Graphics Inc.'s IRIX operating system is available. Willow, in Campbell, Calif., said the server is a fully compliant version of IBM's MQSeries messaging software that enables information exchange between applications. Pricing starts at \$7,000. www.willowtech.com

Resumix Tool

Sunwayo, Calif.-based Resumix Inc. is shipping Resumix Interact for Linux, software that passes data between Resumix's resume-tracking systems and Microsoft-based Linux Software's human resources package.

Pricing starts at \$30,000.

www.resumix.com

Judgment for Java

What programming language do you feel will be used most frequently by corporate programmers in the next three years?



NT 4.0 IS LOOKING BETTER TO CUSTOMERS

Users say improvements in NT — and their knowledge of it — make it more reliable

BY SHARON GAUDIN

FOR MANY COMPANIES, Peer's Coffee and Tea has adopted Windows NT 4.0 and moved away from Unix and NetWare.

But unlike many companies, the \$60 million, San Francisco-based company chose NT for its reliability and manageability, two areas in which IT managers and analysts have often given NT bad marks.

Systems administrator Pat Blair said Peer's went from zero to 15 NT servers in the past year, dropped Unix and Novell Inc.'s NetWare, and switched all of its desktops and point-of-sale machines from Windows 95 and 3.1 to NT 4.0 Workstation.

Concerns about NT 4.0's reliability and manageability are being addressed in Service Pack 4, and information technology itself may have improved at managing it, users said.

"This is so much easier [than Unix or NetWare] for me," Blair said. "It's pretty easy to get devices talking to each other and it's easier to get people trained on it.... It's not as stable or bulletproof as Unix, but it's easier to get boxes talking to each other on a sophisticated level. And it's actually more stable than Novell's NetWare."

Many improvements

"NT 4.0 is a much better product than anything else Windows has to offer. And NT 4.0 is much better now than when it first shipped," said Bill Peterson, an analyst at International Data Corp. in Framingham, Mass.

Windows NT has been heavily marginalized in the past year or so, improving its scalability, reliability and manageability, according to industry watchers. With the long-anticipated arrival of Windows 2000, hopes are high that those improvements will continue. Windows 2000's Active Directory, which will replace the registry in NT

4.0, was designed to help administrators more easily manage applications, objects and devices. Intellicfirm, another tool, is also expected to ease desktop management. Clustering is expected to greatly boost scalability.

Paul Sundquist, assistant vice president at Marshall & Ilsley Trust Co., a Milwaukee financial institution with \$20 billion in assets, said he moved

NT 4.0 is much better now than when it first shipped.

BILL PETERSON,
ANALYST,
INTERNATIONAL DATA CORP.

from NetWare to NT and that it's been more reliable for him.

"There were some learning pains with NT," Sundquist conceded. "There's a lot to understand in the NT model, but it's working for us. I'm not sure why; I'm just glad it's working."

Steven Sommer, CIO at Hughes Hubbard & Reed LLP, a New York law firm with 60 NT servers, agreed that NT 4.0 has improved, but added that "people don't understand working with [NT] domains." They ended up saying it's hard to administer, but they just didn't know what they were doing." ♦

Allchin Lays Out Win 2000 Migration Path

Pledges more help for Microsoft users

As Microsoft Corp. pushed to get Beta 3 of Windows 2000 out the door last month, Senior Vice President Jim Allchin met with several ComputerWorld editors to discuss the upgrade path customers will face.

Q: Can you provide a list for each platform — Windows 95, 98 and NT 4.0 — detailing what will and won't work with Windows 2000?

A: During the install, we walk through everything that's on that system, everything that's in the registry, and we produce a report log. If you have IMAPI device drivers, they will not work. [In other cases], it's [software] that a user... placed on their machine and it's not in our database of information. We try to determine for third-party applications, "Is there a way for us to migrate [the noncompliant software]?" If so, we migrate it.

We're also... shipping on the [Windows 2000 CD] a set of migration DLLs [Dynamic Link Libraries] for Windows 95 or Windows 98 systems. We locate applications that have Windows 95- or 98-specific code [that's incompatible with

Windows 2000]. We try to get a DLL from them that will upgrade [the application]. If we don't have the DLL on our CD, we'll point you to an application vendor's Web site that will help the DLL.

We're trying to tell [IT managers] before we just willingly do the upgrade. We're trying to say, "This is what we discovered about your system."

You can decide whether you continue or don't. And we leave your machine always in a working situation." That's the thing that's important to us. I'm sure, doing the beta test, we will have some mistakes... but the goal of the beta test is to ensure that when we finally ship and a customer upgrades, then their system is working when we're done.

Q: But will there be a system clean and re-loading Windows 2000 is best?

A: I think that there will be some. We hope that number is small. We have talked to accounts that say that's what they routinely do, anyway.

If an IT organization has been very rigid about the type

of platform that they have given out to their clients... they can do [a compatibility test] on a control machine. They can install all the DLLs that they need for migration by getting them all from third-party Web sites and through something called SysPrep [a Microsoft tool], create a new image of Windows 2000 that can be used as a deployment vehicle.

Q: What hardware will users need to run Windows 2000?

A: If you're running an NT 4 system and you're happy with the performance and whatever

apps you're running, and you upgrade it [to Windows 2000 Professional], you will still be happy with the performance. I'm talking about the client.

Most all the servers [components of NT], in regard to the configuration, are faster. So if you have a file server, a print server, a Web server, you will notice performance increases and additional scalability.

But on the client, if you're happy today with NT 4, then you'll be happy when you move. ♦



MICROSOFT'S JIM ALLCHIN: Migration DLLs will help Windows 2000 upgrades



According to a Gartner Group study, employees without formal training use less than 25% of their applications. On the other hand, trained users can increase productivity more than 165%. And those numbers can make a big difference next time you need to get a budget approved.

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Q&A Site Offers Customer Service Apps

BY MARY COLE-DOMBrowski

If you visit the Web sites of Dell Computer Corp. or Toshiba America Inc. looking for

technical support, you'll encounter cartoon-like characters who will answer your most vexing product questions. Or

will give it a try, anyway.

Dell and Toshiba hope to make their Web support friendlier with technology

from Ask Jeeves Inc., a Berkeley, Calif., company that made its name running a question-and-answer Web site (www.ask.com).

Though most early adopters of Ask Jeeves use it to handle

external support, the software could be adapted to provide internal information technology support, analysts said.

Unlike most search engines, which require key words or Boolean search strings, Ask Jeeves lets users pose queries in plain English. "This may help humanize Web-based support," said Dan Ludwick, Toshiba's marketing director for services and support.

Toshiba said it can save money by directing people to its Web site for support rather than fielding phone calls.

When a user types in a question, the Ask Jeeves engine breaks it into pieces based on grammar and the meaning of the words. The question is then matched against templates stored in the Ask Jeeves knowledgebase, a warehouse of all queries that have been correctly answered in the past. Finally, Ask Jeeves maps the question template to the location of the correct answer, whether it resides on a corporate site or on the Web.

Limitations Crop Up

The system is easy to use but has limitations, analysts said. "It lends itself to questions that are relatively simple," said Steve Robins, an analyst at The Yankee Group in Boston. For instance, when asked, "Where can I get information on training classes for Lotus Notes?" Ask Jeeves returned several relevant choices, including training programs and support information from Lotus Development Corp. But when asked, "How many U.S. students graduated in 1998 with degrees in computer science?" its answers were off the mark. It offered a list of classes taught over the Internet, salaries for jobs in the computer industry — even ways to find the people one went to school with.

At Toshiba, the service — which is dubbed Ask Iris — handles "basic sales and marketing questions and takes users to other places on the site," Ludwick said. That capability took about three months to set up, and Toshiba already had the knowledge stored in a relational database. The bulk of the work was in lining up that information with Ask Jeeves' templates, he said.

Pricing for Ask Jeeves varies, but the company said average implementations cost between \$300,000 and \$1 million. ■

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BRIEFS

New Celeron to Bow

Intel Corp. last week announced a 450-MHz version of its Celeron processor and said a new chip set will follow next month. The P500C chip set was designed for high-end computing and can support 4MB of optional display cache, Intel said. Several PC vendors—including Hewlett-Packard Co., Dell Computer Corp., Compaq Computer Corp. and IBM—have announced plans to ship systems using the 450-MHz Celeron.

Compaq Adds to Design Line

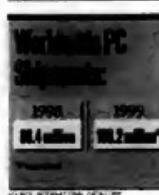
Houston-based Compaq Computer Corp. has added three desktop models to its line of Design Series PCs. One Design EP model offers a 400-MHz Pentium II processor from Intel, 32MB of RAM and a 4.35-inch hard drive. A second Design EP model features a 500-MHz Pentium III, 64MB of RAM and a 10GB hard drive. The Design EP provides a 500-MHz Pentium III, 64MB of RAM, a 10GB hard drive and a network interface card.

Pricing for the systems ranges from \$1,369 to \$2,249. www.compaq.com

RAID Software for NT

Miller Technologies Inc. has announced the Adaptec RAID 102 software for Windows NT loaded with a 64-bit host bus adapter. The kit was designed to bring high-end RAID functionality to the entry-level and midrange server market, according to the Lake Mary, Fla., company.

Pricing ranges from \$1,099 to \$1,399. www.miller.com



BREATHING NEW LIFE INTO OLDER SYSTEMS

Vendors offer products to bridge gaps among legacy systems and Unix, NT

BY STACY COLLETT

WHAT DO YOU do with legacy equipment that refuses to go away?

Life-cycle extension products are helping information technology departments keep legacy systems on life support while migrating to new environments such as Windows NT. But industry observers predicted such extension devices will have short life spans.

Perle Specialist Inc., for example, has just released a ter-

minal/remote access server and LAN hub that connects Unix and Windows NT environments across IP-based LANs and WANs. The device also helps companies move from heavily serial to mixed serial and LAN-based environments. Other companies develop their own, in-house integrated server systems.

"There have been a lot of people trying to tackle that problem," said Jim Shabey, an analyst at Cambridge, Mass.-based Giga Information Group Inc. "In the retail environment, it's the old point-of-sale equip-

ment [that remains]. In branch banking, it's ATMs. Many of them are still running IBM's networking protocol from the late '60s."

Perle's Lanstream 2000 supports mixed environments of both serial and PC devices. The product is available in 16-series and eight-hub port or 16-series and 16-hub port versions. Pricing starts at \$1,695. The Jetstream 4000, which costs \$1,095, is a compact, 16- or 24-port terminal server that connects a larger range of serial devices to a Unix or NT host. Both products come with software that enables remote management and configuration via the Web.

Industry watchers said the products work for companies that don't have the capability to rewrite code or the money to replace systems.

"The problem is it's potentially a short-lived segment. How long does it take for people to kill these apps off? Five to 10 years? What do they do after the rest of the world is rewritten on Java or Microsoft [Standards]?" asked Scott Lundstrom, vice president of technical research at AMR Research Inc. in Boston.

But potential users are optimistic. "The idea of [such a] device is wonderful," said John Thompson, vice president of technology at Sales Mark Inc., a Plano, Texas-based food brokerage firm. "The issue will be, What specific problems can it solve?" ■

Qualcomm Combines Palm Platform, Cell Phone

Some say devices are not quite ready for IT

BY MATT HAMBLEN

Qualcomm Inc. plans to ship its new line of pdQ smart phones some time this summer, but analysts said it's unclear how quickly the workplace will adopt such hand-helds.

The pdQ device sounds like a dream to technology-savvy executives who want a combined cellular digital telephone and personal digital assistant (PDA) based on the Palm operating system from Palm Computing Inc., a division of 3Com Corp. in Santa Clara, Calif. That combination will give users voice and data transmission capability, wireless Internet and e-mail access and a personal organizer—all in a 10-oz. package.

But gaps in digital wireless service, questionable security and a dearth of applications are seen as slowing the device's corporate acceptance.

"The pdQ interests me on a personal level and for a couple of managers who want a lot in one device," said Jim Vannette, chairman of Holland Special

Delivery, a delivery service in Holland, Mich. Vannette recently tested the pdQ at the Mobile & PDA Expo in Chicago.

San Diego-based Qualcomm has been vague about the pdQ's pricing, saying only that it will run from \$500 to \$1,000, depending on the service provider. Vannette said the device would be "worth it" because it would eliminate the need to buy a separate Palm device. "Unfortunately, we don't have digital wireless network service in our area yet," he added.

Digital wireless service gaps will be a problem for all smart-phone makers, slowing the devices' adoption among corporate users, analysts said. Smart-phone makers seem to be marketing mostly to consumers so far, bypassing corporate information technology managers, they said.

"It will be a while before there's enterprise connectivity with smart phones," predicted Jill House, an analyst at International Data Corp. in Framingham, Mass. In addition to cellular network gaps, companies will find "there are not the software applications and the

firewalls available to make smart phones compelling," she said. The pdQ is the first smart phone to implement the popular Palm operating system, which should give it more market momentum than similar devices, House said. ■



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SHOE CHAIN LIKES FIT OF DIAL-UP FOR ITS VPN

56K bit/sec. connections move sales data, e-mail more cheaply than frame relay

BY BOB WALLACE

AFTER PASSING on more expensive, frame-relay wide-area network services, DSW Shoe Warehouse replaced the rudimentary system it uses to poll stores for sales data with a relatively inexpensive dial-up virtual private network (VPN).

The VPN, which uses AT&T Corp.'s Internet backbone, will be far cheaper, faster and more secure than using what had largely been 9.6K bit/sec. dial-up connections to DSW's 50 stores nationwide.

Hosting Availability

"What we're creating is a pseudo wide-area network that's available around the clock for our stores," said Fred Bunell, MIS director at the shoe retailer's parent company, Shonac Corp. in Columbus, Ohio. "It's very inexpensive, offers a great degree of flexibility and provides a foundation

for us to deploy new systems for our stores."

Using a VPN based on one Internet service provider's backbone is a popular approach, but it's less common to move directly from simple polling to using a VPN for real-time communications and applications, such as e-mail, according to Tom Nolle, consultancy in Voorhees, N.J.

Nolle said DSW's approach is a relatively inexpensive way for customers to make such a move. It's also flexible because individual stores can use leased lines to the network if their transmission needs increase, he said.

Bunell said he considered a frame-relay network and a dial-up frame-relay network. The former would have provided guaranteed speeds of 56K to 64K bit/sec. but would have cost \$25,000 to \$30,000 per month. A dial-up frame-relay network would have cost



SHONAC CORP.'S FRED BUNELL: The DSW dial-up VPN "provides a foundation for us to deploy new systems for our stores"

\$13,000 to \$15,000 per month.

The VPN implementation that was selected by DSW of-

fers speeds of 56K bit/sec. at best but costs only \$1,200 to \$1,500 per month.

choices — both of which promise lower costs.

SNA networks, which grew out of mainframe technology, were until recently considered far more reliable and robust than client/server-based IP networks. SNA's low-bandwidth requirements and guaranteed service levels were ideal for transaction-intensive networks such as those for banking and reservations systems. Concerns that much of that would be lost in a switch to IP has delayed a mass migration — as has the potential loss of legacy applications and vendor relationships.

Fewer than 50% of mainframe shops that had SNA networks in 1990 now have consolidated networks, according to Gartner.

American Mutual is in the midst of an SNA-to-IP conversion involving more than 3,200 sales offices, 8,500 workstations and more than 6,500 users in 70 corporate offices. Much of that migration is being driven by the greater vendor support and product

The company considered building a VPN using the services of multiple Internet service providers, but Bunell wanted one that offered points of presence, or entry points to the backbone, close to each DSW store.

"A single [Internet service provider] providing a VPN on its own infrastructure can provide service-quality assurances, whereas all you get is best-effort performance with the Internet," Nolle said.

But customers can still be subject to problems on the backbone, such as congestion and security, he added.

With the VPN, a DSW employee is first authenticated against a list in a special server running at a DSW location. If the user is approved, a 56K bit/sec. modem connects him to the closest AT&T entry point.

Then a 3Com Corp. router at the DSW site establishes a tunnel to the destination and applies 128K bit/sec. encryption to the data for transmission. That data is then decrypted by the router at the receiving site.

Once the VPN is completed — three of the network's sites are already up — DSW stores will be able to communicate with headquarters online in real time, allowing e-mail to replace heavy faxing and phone calls to headquarters. Bunell said. ■

Report Urges Switch From SNA to IP Nets

Stragglers may miss Web opportunities

BY JAMESMEAR WILAYAT

Corporations that stick with SNA networks as their primary access to legacy data will soon be spending more money and deriving fewer benefits than those using consolidated networks based on IP, according to a recent Gartner Group Inc. report.

And the longer the integration is put off, the greater the total cost of ownership of SNA networks will be because of falling product support and skills availability, said Audrey Apfel, author of the Gartner report.

There's also a greater chance of missing Internet-related

business opportunities that can be exploited only via IP networks, she added.

"Web-based features and functionality will continue to be built and centered around IP," said Steven A. Clemens, director of network technologies

at American Family Mutual Insurance Co. in Madison, Wis.

Despite those reasons to switch, SNA-based shops have moved slowly to IP because of performance concerns and a reluctance to walk away from SNA-related investments in technical skills, business processes, applications and vendor relationships.

Fewer than 50% of mainframe shops that had SNA networks in 1990 now have consolidated networks, according to Gartner.

American Mutual is in the midst of an SNA-to-IP conversion involving more than 3,200 sales offices, 8,500 workstations and more than 6,500 users in 70 corporate offices. Much of that migration is being driven by the greater vendor support and product

Three Good Reasons

Why companies should consolidate SNA networks into IP-based networks.

SNA networks will become increasingly costly to own.

SNA skills, management tools and applications will become harder to find.

New Internet-driven business opportunities can be addressed only via IP.

SOURCE: GARTNER GROUP INC., STAMFORD, CONN.

letting customers layer SNA-like capabilities — such as traffic and bandwidth prioritization — on top of IP networks, said Gary Weaver, network communications manager at Smurfit-Stone Container Corp. in Chicago.

Other Options

Vendors such as Cisco Systems Inc. and Nortel Networks Inc. subsidiary Bay Networks Inc. offer products that allow customers to run SNA on top of IP networks.

Other technologies, such as Frame Relay Access Services, APPN, Data Link Switching and TN3270, allow SNA traffic to be sent over IP networks both natively and in encapsulated form.

Those advances not only close the performance gap, but also provide many of the bandwidth reservation, traffic prioritization and management capabilities of SNA, Apfel said. ■



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TECHNOLOGY NETWORKS

BRIEFS

Viking USB Modem Is Hot-Swappable

Viking Components Inc. is shipping the Viking 56K USB Modem, a Universal Serial Bus (USB) modem for PCs and Macintosh systems. The external modem lets users access servers and Internet server providers that support the V.90 or K56flex standards, according to the Rancho Santa Margarita, Calif., company. It's hot-swappable so users can switch it with another USB device without powering down.

The modem costs \$119.99.
www.vikingcomponents.com

Linksys Adds Modem Card for Notebooks

The Linksys Group Inc. has released the Linksys EtherFast 10/100 + 56K Modem PC Card for notebook users. The 16-bit PC Card requires one PC Card Type II slot or one 32-bit Card-Bus slot, according to the Irvine, Calif., company. Users can run LAN and fax/modem functions simultaneously.

The PC Card costs \$109.99.
www.linksys.com

Token Ring-Ethernet Adapter Announced

ZYXEL Corp. has announced a multi-protocol network adapter that lets workstations on Token Ring and Ethernet networks share the same servers. Called NetBlaster ZX361-BSL, the 10/100 Mbit/sec. network adapter works with Cisco Systems Inc. Catalyst switches and supports both Token Ring and Ethernet simultaneously.

The adapter costs \$799.
www.zyxel.com

NetReality WAN Management Tool

In June, NetReality Inc. will ship WinWAN 3.0, enhanced bandwidth-management software for wide-area networks. The software now supports inverse multiplexing, which lets users "glue" up to four T1 lines together for greater bandwidth, according to the Santa Clara, Calif., company.

Pricing starts at \$2,495 per link.
www.net-reality.com

Products Offer Automated Security

Network Associates Inc. in Santa Clara, Calif., has announced new

releases of three security products: Barricade Firewall 5.0, Cybercop 5.0 and PGP VPN 6.5.

The releases include what the company called a new approach to automating enterprise security. The strategy, called Active Security,

includes new technology from Network Associates and a series of partnerships with companies that include Microsoft Corp., Hewlett-Packard Co., Enterasys Technologies Inc. and VeriSign Inc.

A secure communication coordi-

nator, called Event Orchestrator, links Network Associates' security products with partner technologies to share information across a network and react in real time to security breaches.
www.nai.com

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WEB AGENT TAKES SITE EVALUATION TO THE MAX

WebCriteria tool simulates human activity to compile best — and worst — site traits

BY CYNTHIA MORGAN

ALTHOUGH he's limited to a 28.8K bit/sec. modem with standard browser and plug-ins, "Max" doesn't waste time wishing for a high-speed Internet connection. He's dedicated to finding information on your company's Web site, and he won't stop looking until he finds it. An experienced Web surfer, he'll hesitantly click through link after link — but is very good at finding the shortest path to his goals.

Max is your typical Web site visitor in every respect except one: He doesn't exist.

Max is the creation of WebCriteria Inc., a Portland, Ore., start-up that's attempting to quantify what many Web experts consider unquantifiable: the usefulness of a large Web site. Max, a software simulation of human browsing behavior that WebCriteria CEO and President Alastair Williamson calls a "calibrated customer," can surf a Web site in the same way and return hard numbers detailing what a real customer experiences on a site.

The result? A standard for measuring the usability of a Web site against similar ones. It's a potentially powerful tool for gaining an edge over competitive sites and helping administrators decide when they have an infrastructure problem and when it's time to bring in the Web-design crew.

Studies show again and again that users who can't quickly find what they need in a Web site will leave and probably won't come back.

Conventional wisdom holds that true Web site performance can't be measured for several reasons. For one thing, today's personalized Web sites have no real static existence; they're built on the fly for each visitor and change accordingly. For another, wild fluctuations in Internet performance make it difficult to determine if slow

navigation is caused by poor site design or Web delays.

Largely uncontrollable factors will manage the speed of a user's day-to-day Web experience, independent of the site design. WebCriteria solves that problem by isolating the Web site and testing it off-line. The company first sends its

"spider" — a software agent that enters a Web site, follows links and gathers information about each page — to gather what Williamson calls a "service" portion of the site. Ranging from about 200 to 600 page views, it's what WebCriteria's experts say a visitor would see in up to 10 hours of browsing.

The spider's data gathering is used to create a model of the site on WebCriteria's servers. Once created, Max enters the

site and compares its experience with the best and the worst for that type of site.

WebCriteria's chief money-maker, its SiteProfile reports, compare a client's Web site with the best and worst in that customer's industry. Customers can buy reports online, specifying one or two competitors for in-depth comparisons. SiteProfile can also include benchmarks for the client's industry. Williamson says his researchers have put together about 20 industry benchmark packages and will have 40 online this summer.

Questions Answered

The reports answer the following questions for the client site and its competitors, assigning numeric ratings to each for comparison purposes:

- Speed. What's the response time for the average user request? How quickly does a page load? How long does it take to traverse the links required to reach a particular page? How will those scores vary with low-bandwidth access devices such as modems?
- Accessibility. How easy is it to quickly navigate the site? How many choices appear on the page? How much content do users need to read before making choices? How many clicks does it take to reach a goal by the shortest path?
- Refresh rate. How often is the site updated? Are graphics, audio and other multimedia frequently refreshed or are updates confined to test?
- Composition. What impression will the average surfer gain when he browses the site? What types of files are found on the average Web page? Are they text-only, which can be tedious to browse, or graphics and Java applets, which can take time to download? How long does it take to view each?

Max will soon have co-sources. WebCriteria sells reports, not tools to build reports. That could be a problem for IT managers who work interactive control. It's not popular. WebCriteria reports give hard numbers. Administrators must decide for themselves what those numbers mean. Your mileage may vary. WebCriteria can point out problems with site design. You will still need to diagnose and solve problems relating to network infrastructure.

A Customer's Feedback

CyberSight Inc.
Portland, Ore.
www.cybersight.com

CyberSight has built online strategies for companies like AT&T Corp., Visa International Inc., Microsoft Corp. and Molson Breweries Inc. Bob Trebil, vice president for client services at Molson, said the company has for hire ordered WebCriteria reports for Molson and its own internal sites.

Does It Work?

"It helps you prioritize, working according to a competitive strategy. We can report on Molson comparing it to sites owned by Budweiser, Labatt's and a prominent entertainment company and found that in some areas we were already very competitive. In others we weren't. So we knew right away where we should be concentrating our efforts," Trebil said.

"Most of [our sites] video [and audio] rich media? Almighty! They're looking at it from purely their perspective. But a user may think the trade-off — waiting 30 seconds to get a video clip — is worth it. If you can show your competitor has the stuff, it makes a stronger case for yourself," he said.

Red Flags

"There are fast-and-fail rules: as to what's good and what's bad," Trebil said. "If I'm looking up a term on www.com, I want the answer in a few seconds. If I'm going to MSN.com, I might expect to be on the same page for several minutes. Both are defined results: you must know how to use WebCriteria to determine if your particular results are good or bad."

— Cynthia Morgan



WebCriteria Inc.

Locations:
1026 SW 2nd Ave
Portland, Ore. 97201

Phone: (503) 225-2998

Web address: www.webcriteria.com

Notes: WebCriteria offers information technology managers a hard-numbers rating system for Web-site performance and ease of use.

Company officers: Alastair Williamson, CEO and president; Chris Til, chief technical officer; Bruce Corrco, vice president of marketing and sales; Stephen Lazarus, general counsel; Pat Huber, chief financial officer; Ross Frithman, learned advisor.

Milestones: Company founded in 1996; SiteProfile released March 1999

Employees: Seven, plus several contractors and interns

Profitability: Too early to discuss.
Williamson said.

senior citizen does. What we're trying to do is create 'calibrated persons' who can tell us exactly how specific groups will view a Web site."

Williamson said the company has no plans to sell a packaged benchmarking tool, mostly because of the potential for overloading Web servers with data-hungry spiders.

"We initially considered selling our software," he added. "But while it's fine for one company to spider a site, what happens if 100 companies use our software to spider Amazon.com in the same week?"



In a developing story,



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IT ALL STARTS HERE.



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Java Applets

BY CARLA CATALANO

JAVA APPLETS are little applications that can breathe life into an otherwise lifeless Web page. Java is more powerful than straight HTML—the language used to create Web documents. A Java applet makes things happen on the Web page, unlike HTML, which uses displayed text boxes and fields but isn't heavily interactive.

When Java applets first hit the market three years ago, they were really hot because you could add cool animation to your Web site, says Anne Thomas, an analyst at Patricia Seybold Group in Boston. People were using applets to add animation to their pages just for fun, she says. Today, people are less inclined to add animation unless it's the focus of their Web page — like a Nasdaq Inc. banner floating across the page or a twirling view of a catalog product — because it takes a long time for end users to download an applet.

But once it's loaded, response time is pretty quick. Thomas says. Plus, the fanfare over animation is gone for most people, she adds; they now use Java applets to provide critical information, not bells and whistles.

A Java applet is like "a little Windows application running inside your Web browser," Thomas says. People use the mini-applications to bring in a

[DEFINITION] **A Java applet is a small application written in the Java programming language and used in Web pages. It can make a site more interactive by adding animation like a waving American flag or provide a business use like a spreadsheet tool.**

Web page windowing capabilities like a spreadsheet tool or utility functions such as a calculator to make their Web sites more interesting and interactive, she says.

The end user doesn't need to have technical knowledge to run an applet, says Sally Cusack, an analyst at International Data Corp. in Framingham, Mass. In fact, because Java applets work behind the scenes, the user often doesn't know he's using an applet — he just knows the job is getting done.

"Almost any program that can be written in Java can be written as an applet," Thomas says. That means you can execute your internal application systems from a Web browser anywhere in the world, she says. For example, if your order-entry system runs on Windows, you can build the user interface in Java and run it from any machine.

The Java applet's cross-platform capabilities may be its biggest strength, Cusack says. Java applets can run on any

Java-compatible Web browser. That's important because the browser is the "universal common denominator" when it comes to downloading from the Web, Cusack says. "That portability makes using Java applets virtually worry-free in terms of technology," she adds.

Java applets provide more functionality than HTML, but they're no longer regarded as silver bullets, Cusack says. "Applets can clog the network pipes because they provide more real estate than you need," she says.

The bottom line: Use Java

applets when you need a richer, more graphical user interface, says Mike Gilpin, vice president at Giga Information Group Inc. in Cambridge, Mass. Otherwise, stick with HTML: it's thinner, lighter and faster than the Java applet, he says. ♦

Carla Catalano is a freelance writer in Holliston, Mass.

Are there techniques or issues you'd like to see covered in Technology QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCrea at stefanie_mccrea@computerworld.com.

MORE ONLINE

For more information about Java applets, visit our Web site:
www.computerworld.com/applets

Here's an Example of a Java Applet That Helps You Shop

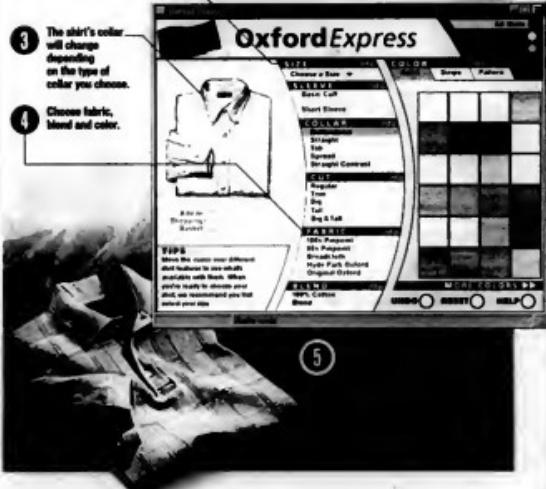
Go to www.landend.com and click on Oxford Express. The Java applet lets you see exactly what the shirt you're ordering will look like. It's like going to the store without leaving your PC.

1 Start by choosing your size.

3 The shirt's collar will change depending on the type of collar you choose.

4 Choose fabric, brand and color.

2 As you click on the type of sleeve you want, the picture changes to show you what the shirt looks like.



AT A GLANCE

Java in Flight

Here's an example of a Java applet that lets you track a plane in flight. Go to www.thetrip.com/flightstatus/graphical/bin/majorair.html. Plug in the airline and flight number; the Java applet will launch, and you'll get this window which shows:



- 1 Speed, direction and altitude at which the plane is traveling.
- 2 The flight's origin and its destination. And from where the plane has traveled. (See where how much further it has to go.)
- 3 A map shows exactly where the plane is on the screen across the screen.

③

More than Web-to-Host

If you have a mainframe, somewhere around 70% of your corporate data is on it. But if that data is not available to the users who need it, it's being wasted.

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hosts. WMA lets you control deployment, access and configuration rights throughout your network from a single central server. And you don't need to sacrifice full printing, HLLAPI support, or file transfer capability.

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VPNs Build Momentum

Cost savings are the powerful allure of IP-based private nets. But IT waits for a mature industry, performance and safeguards
By Elisabeth Horwitt

FOR BLACK & VEATCH, the principal benefit of using IBM Global Network's virtual private network (VPN) service for remote access can be simply stated: no more \$200 overseas phone bills from foreign hotels.

"In some countries, hotels charge \$6 per minute, so we could get a bill for \$200 for a single night" when engineers dialed home to check e-mail or to access financial or product information, says Jim Baird, manager of networked systems at Black & Veatch Solutions Group, the information technology arm of the Kansas City, Mo.-based construction and engineering firm.

Engineers can now make a local call

to an IBM Global Network point of presence pretty much anywhere they travel overseas. They can then log on and communicate with corporate systems over the carrier's IP backbone. The cost? 5 to 12 cents per minute. Better still, "We don't have to pay the cost of caring [for] and feeding a bunch of modems or remote access servers around the globe," Baird says. "We're paying a carrier to extend the boundaries of our IP network."

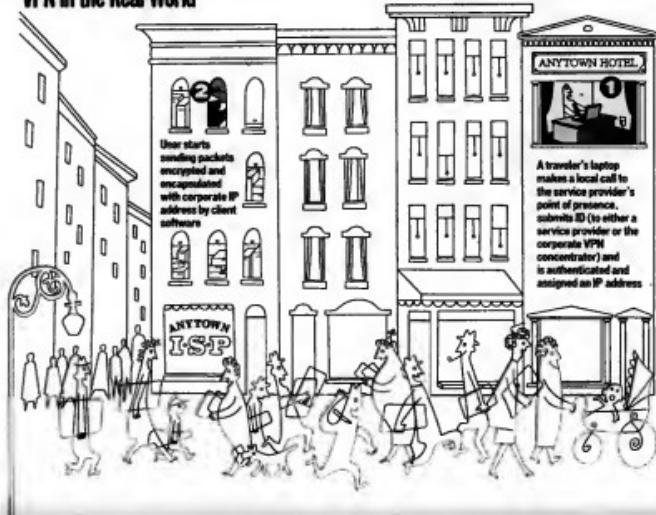
Black & Veatch is far from alone in perceiving the VPN's potential as a remote access vehicle. "Interest in VPNs is very high because of the potential cost savings," says Cherry-Rose Anderson, a research analyst at Gartner Group Inc. "Nearly 100% of the enterprises I talk to on a regular basis about remote access are looking at the role VPNs could play in their enterprise."

According to industry watchers, Black & Veatch, along with a handful of other bleeding-edge firms, is at least a couple of years ahead of the rest of corporate America when it comes to implementing VPNs.

Virtual Privacy

The basic VPN concept is to create a virtually private connection over a shared IP-based network medium either the Internet or a service provider's IP backbone. That's accomplished by IP addressing — which sets up a point-to-point flow between, say, a remote PC

VPN in the Real World



TECHNOLOGY

and a corporate VPN server — and by security mechanisms like user authentication and encryption (see diagram).

VPN cost savings over a traditional remote access server or modem banks and dial-up lines range from 30% to 70%, depending on the type of VPN equipment and service implementation used and where users are located, says Eric Zines, a senior consultant at Telechoice Inc., a Dallas research firm.

Big Savings

For example, when FormFactor Inc. switched from dial-up remote access to Intelispan Inc.'s VPN service, connect charges from Asia to the Livermore, Calif., data center plummeted from \$100 per hour to \$21 per hour, according to Gene Donlan, IT director at the computer chip testing probe manufacturer. From Europe to California, Intelispan charges \$9 to \$32 per hour of connect time, compared with typical European long-distance charges of \$40 to \$60 per hour. Anywhere in the U.S., it's \$2 to \$3 per hour for the VPN service.

VPNs can also mean big savings in the man-hour costs of administering remote access equipment, users say. "Say you want to support concurrent [remote] access for up to 200 users: That means 200 [outgoing] lines, 200 modems and 200 connects into your firewall — all of which need to be managed," Donlan says. "That's pretty labor-intensive" compared with a single VPN concentrator.

Even with carrots like those to tempt them, however, corporate IT departments are hardly racing toward VPNs. "Almost no one I've talked to has deployed a VPN network on any significant basis," Anderson says. "Penetration right now is very low, although we expect significant growth over the next couple of years."

What's holding users back? Many are waiting for the technology to mature and the industry to stabilize, analysts say. A lot of key products are only starting to ship. For instance, the Communications Network conference in January saw a slew of vendors, including Altiqa Networks in Franklin, Mass., Network Alchemy Inc. in Santa Cruz, Calif., and VPNet Technologies Inc. in San Jose, announce high-end VPN concentrators that can handle thousands of remote users concurrently.

More important, perhaps, users want to be sure VPN products can address what many see as the Internet's main drawbacks as a business communications vehicle: its lack of security safeguards and the impossibility of guaranteeing end-to-end network performance for high-priority or latency-sensitive applications.

When Telechoice recently surveyed more than 500 telecommunications and IT managers, security and performance were the two areas most cited as "very

important" by those respondents who said they were buyers planning to implement a VPN within the year.

VPN technology addresses the Internet security issue through tunneling, in which two systems establish a secured point-to-point connection, or tunnel, across the Internet or a shared IP backbone through one or more security mechanisms. To set up a tunnel, the remote client first would have to know the receiving corporate system's IP address, then identify and authenticate itself before making use of encryption software that the receiving system also uses. Some companies use public-key infrastructure for added security.

Unfortunately, all of those security mechanisms add significant overhead, to both packets and the communications equipment that processes them, which can seriously degrade throughput.

While evaluating VPN equipment a year ago, for example, FormFactor in Livermore, Calif., concluded that tunneling could mean an overall throughput reduction of 40% to 70%, Donlan says. That was a problem because traveling sales and design engineers would be using those remote VPN connections to do critical tasks: process sales orders, answer customer service requests and coordinate new card designs. "We wanted those connections fast and secure, as if they were locally attached," Donlan says.

A third reason users are taking a wait-and-see tack with VPNs: Its nature keeps changing. First it was straight tunneling over the Internet. Then Internet service providers and carriers like IBM Global Network and AT&T Corp. started offering VPN connections over their commercial IP backbones.

With such one-carrier VPN services, "throughput is a bit more predictable [than it is on the Internet], and security is better too, because [connections] aren't public or accessible to the world," Baird says. To some users and analysts, however, those aren't true VPN services. That's because the customer must still install in-house equipment to take care of encryption and authentication.

But that's changing. The major providers are starting to provide authentication and encryption on their systems. And the latest generation of VPN offerings go further, offering to take more of the burden of administering remote user connections off customer premises — and off the shoulders of in-house telecommunications managers.

"A number of equipment and service vendors are working on VPN solutions that live entirely in the [wide-area network service] cloud," Zines says.

Two examples of value-added or managed VPN services are Intelispin in Scottsdale, Ariz., and Concentric Network Corp. in San Jose. Denver-

We're paying a carrier to extend the boundaries of our IP network.

JIM BAIRD,
MANAGER OF NETWORKED SYSTEMS,
BLACK & VEATCH SOLUTIONS GROUP

based Qwest Communications Corp. plans in the third quarter to introduce what it calls a "network-based VPN service" that will provide authentication, encryption and firewall services within the network, "so there's no extra gear [such as a VPN concentrator] to be administered on-premise," says Bill McLeod, Qwest's director of Internet services marketing.

Full-Service Package

The comprehensiveness of Intelispin's VPN services was the main reason FormFactor chose it over rivals such as AT&T and IBM Global Network, Donlan says. Intelispin handles encryption and identification/authentication for customers and also provides an optional public-key identification security layer on its own systems. FormFactor's IT managers do the initial setup as well as updates of user access rights and new users, Donlan says, but the equipment is maintained by Intelispin.

"We're a relatively small company, and we don't want to waste human resources managing our own wide-area network," he adds.

Other organizations share those sentiments. Fitchburg State College has been pilot-testing Lexington, Mass.-based Digital Signal Communications Inc.'s VPN services as a means of giving commuter students and telecommuting faculty access to on-campus computing resources.

"They said they could provide points of presence all over New England, which would mean a local call for everyone, instead of building up a remote modem pool and charging people for long distance or a [toll-free] number," says Joe Turner, associate director of MIS at the Massachusetts college.

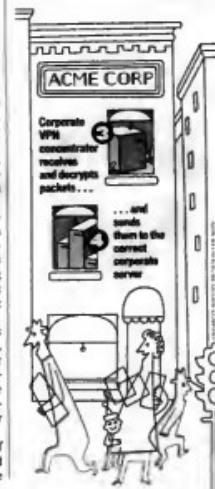
Even better, from Turner's point of view, the service provider has offered to take over several administrative

tasks. "We knew it would be harder to find [technical] personnel than to pay for the equipment," Turner says. Digital Signal Communications' VPN service includes help desk support, user bill-back services and the management of user authentication on its Radius server. Fitchburg State will still need to install a VPN concentrator to handle encryption and tunneling, but the service provider supplied technicians to help implement and configure the Altiqa VPN concentrator it sells to customers.

Even so, Fitchburg State — like many potential VPN implementors — is still far from an enterprise-wide rollout, Turner says. "I'm going to outline the technology and capabilities of VPN to key academic and administration people, and let them decide."

Fitchburg State's chief financial officer and key members of Turner's staff have been trying out VPNs as a way to access computing resources on a Windows NT server on campus. They previously used Symantec Corp.'s pcAnywhere dial-up software. "pcAnywhere was a lot slower," Turner says. "But we'll see if they care whether we pull the plug on the VPN service after the pilot test is over. The last thing I want to do is force VPN down users' throats."

Howitt is a freelance writer in Waban, Mass. Her Internet address is ehowitt@compuserve.com.



FLAT OR FAT?

DESKTOP DISPLAYS: IT managers need to be aware of the technical and support issues involved in deploying flat-panel monitors, not just their added cost By Russell Kay

IN MANY OFFICES, flat-panel display monitors have become the newest high-tech status symbol. But realistically, why should you even consider equipping your organization's users with desktop flat panels? That's a question that information technology managers are going to have to confront over the next few years — because flat-panel monitors are coming on strong.

If you've ever worked with a good desktop flat-panel monitor, you know the primary reason users want one: Everything looks better on it. And the monitors take up so little physical space — especially compared with large CRT monitors — that they return a significant chunk of desktop real estate. For most people, to use one is to want one. The obvious

problem is justifying their cost, but there are other issues an IT manager needs to take into account.

For one thing, screen size may be far more important to the user than the monitor's footprint on the desktop. Many — perhaps even most — users are likely to prefer a \$600, 15-in. CRT to a \$1000, 15-in. flat panel. The CRT is somewhat more versatile: It can be used at higher screen resolutions that allow more windows to be open on-screen simultaneously — and let more data be displayed. And as far as CRT size being a problem, if the monitor is placed in a corner, as is common in offices today, the physical size of the unit is less important; the space that would be gained by using a flat panel may not be of real use.

But anyone who uses multiple monitors (a feature

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77

Flat Panels Hit Wall Street

menus that are just too small. (There are workarounds, but they clearly involve extra support time.)

So if XGA is too fine, why not run at a lower resolution, of say, 800 by 600 pixels? That's what you would do with a CRT monitor, but it may not be a workable option for an LCD panel. At present, there are only two ways to display a lower resolution on an LCD screen: One is to reduce the physical size of the displayed image (by putting a black frame around it), which defeats the purpose of going to a lower resolution in the first place because it doesn't change the displayed size of anything. The second, more common approach is for the display to interpolate pixels as best it can. But once you deviate from an LCD panel's built-in resolution, you give up the one-to-one correspondence between horizontal pixels (in the output image) and horizontal triplets of thin film transistor elements (in the physical display panel).

It's that one-to-one relationship that makes the image so sharp and clear in the first place. Some flat-panel displays handle that translation with relative grace and minimal image degradation. But some cannot, instead showing visible irregularities and blotchy letters and numbers — just the things we work with most.

Big Adjustments

Finally, while the flat-panel display industry is in the process of moving to digital interfaces with graphics cards, most of the panels available today are using analog output. That makes setting them up a very different experience than with CRTs; you'll need to make adjustments you've never heard of before. It's helpful that you no longer have to adjust image sizing and placement or correct geometric distortions, but those corrections were relatively intuitive and easy to make.

Instead, you now have to adjust some obscure — and often hair-trigger — parameters such as clock phasing and frequency. Making those adjustments isn't that difficult, but the real problem is that most users and technicians don't clearly understand the basic functions of the new controls or their interactions. Thus, if you roll out a number of flat-panel monitors, you can expect to have IT staff spend time setting up the display for each computer separately. You may also need specialized software tools like Sonera Technologies' DisplayMate for Windows.

Maybe Too Light?

The remaining advantage of the LCD display is its light weight. It has one quarter to one-third the bulk of a similarly sized CRT monitor. Flat panels are easy to move around; with many, you can detach the panel from its weighted base and hang it on a cable wall or extension arm. Unfortunately, that portability and detachability also make flat-panel displays obvious — and attractive — targets for theft. Newer flat panels come equipped with built-in slots for locking devices, from vendors such as Kensington Technology Group, that are much like those already being used to protect laptop computers from walking away.

This Will Be In

Any IT manager planning for future technologies should right now be considering how to deal with the many issues raised by flat-panel displays. It's clear that they are gaining in popularity, falling in price and creating demand among users. According to Ross Young, president of DisplaySearch in Austin, Texas, flat-panel monitor sales are expected to grow by over 600% per year in the near future. In the end, it might not be a matter of whether you roll out flat-panel displays — but when.



enabled by Windows 98 and NT 4.0) can instantly appreciate the reduced footprint of flat-panel displays. It's hardly surprising that financial trading firms, which might have three or four monitors on each person's desk, were among the first to adopt flat panels (see story, above).

My Friend Picker

You must also take into account the support, maintenance, flexibility and applicability issues when deciding whether to move to flat-panel displays. And even when you've decided you can justify or afford one, you need to determine if it's the right choice for your users' applications.

For most office and productivity applications, that's no problem. Flat panels present a stable image with

no flicker whatsoever, and the clear definition of their pixels — with no image blooming or focus problems — makes on-screen type and graphics appear sharper than do similarly sized CRTs.

There's a significant trade-off for that sharpness, however. Unlike CRTs, the LCDs used in flat panels are designed with a single image resolution in mind. For 14- and 15-in. desktop flat panels, that's usually a resolution of 1024 by 768 pixels, which may be too small for easy use by some people.

A few years ago, before the advent of desktop flat panels and big-screen laptops, the commonly accepted wisdom held that you didn't run Extended Graphics Array (XGA) on anything smaller than a 17-in. monitor. Now we're looking at 14-in. LCDs running XGA, and for some users that presents icons and

TECHNOLOGY

Flat Panels Hit Wall Street

By MICHAEL NEILING
Special to Computerworld

WHEN YOU WALK into the trading floor of the New York Stock Exchange, you'll see a wall of flat-panel monitors. They're everywhere, from the trading booths to the trading desks to the computer terminals. And they're not just there to look good; they're there to make money.

It's not just the NYSE that's using flat-panel monitors. In fact, the financial industry is one of the most aggressive users of flat-panel technology. In addition to the NYSE, the Chicago Mercantile Exchange, the Nasdaq, and the American Stock Exchange all use flat-panel monitors. And the trend is spreading.

So why are flat-panel monitors so popular in the financial industry? The answer is simple: They're fast. And they're accurate. And they're reliable. And they're easy to use. And they're easy to maintain. And they're easy to upgrade.

But there's more to it than that. Flat-panel monitors are also very efficient. They use less power than CRT monitors, which means they cost less to run. They also have a longer lifespan than CRT monitors, which means they won't need to be replaced as often.

So if you're looking for a reliable, accurate, and efficient way to display your financial data, then a flat-panel monitor is the right choice for you.

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It's that one-to-one relationship that makes the image so sharp and clear in the first place. Some flat-panel displays handle that translation with relative grace and minimal image degradation. But some cannot, instead showing visible irregularities and bad-looking letters and numbers — just the things we work with most.

Big Adjustments

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This Will Be In

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My Friend Flicker

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Flat, Thin, Big, Beautiful—Pricey

BY CHRIS LINDQUIST

THOSE back-breaking, power-wasting monitors on your employees' desks are nearly obsolete — the flat panels are here. The new displays can save in a lot of ways: in size, weight, power — even eyesight.

About the only thing they won't save your company, at least in the short term, is money.

Flat-panel LCDs may not be new, but they've tended to cost far more — and perform worse — than their CRT predecessors. As a result, LCDs initially found homes on notebook computers, in which portability was critical and buyers weren't so price-sensitive.

But in the past year, that situation has changed. Flat-panel technology has improved, pro-

viding better image quality. Colors jump off the screen and text is sharp even in the smallest font sizes. And price cuts from suppliers have made sub-\$1,000 desktop LCDs possible.

Several of the new monitors are bypassing traditional analog display technology, as well. To work with the graphics cards found on the majority of

PCs, most desktop LCDs must contain an analog-to-digital converter.

But today's all-digital panels are eliminating that conversion process — keeping PC images digital all the way from the CPU to the screen. That eliminates performance bottlenecks and provides significantly better picture quality.

But while the Asia financial crisis initially prompted LCD makers to cut prices in order to

bring in much-needed cash, it also caused many of them to stop construction of LCD manufacturing facilities. As a result, the latest crop of digital flat-panel displays is actually more expensive than the last.

Falling Prices

Flat-panel prices might soon be dropping, however, thanks to a new technology called Field Emission Display (FED). Like CRTs, FED panels use illuminated phosphors to produce images, but they don't require the bulky electron gun found in CRTs.

FED desktop monitors slated to arrive next year should cost around \$500 — making them competitive in price with similarly sized CRTs, according to Rob Enderle, vice president in charge of desktop and mobile technology at Giga Informa-

tion Group Inc. in Cambridge, Mass.

FED monitors do have one disadvantage: "The current generation of flat-panel displays arguably don't wear out," Enderle says, whereas "FED technology tends to run out of steam in three years."

That means buyers should expect to replace their FED monitors after about 36 months.

But for now, all digital matrix LCDs are digital active-matrix LCDs, are all the rage, so we took a look at three: One each from ViewSonic Corp., MagInnoVision Co. and Number Nine Visual Technology/Silicon Graphics Inc. They all cost more than CRTs of a similar size, but each has its unique advantages. □

Lindquist is a freelance reviewer in Moss Beach, Calif. Contact him at chris@lindquist.com.

mode is ideal for looking at a full page of text and graphics — there's no need to scroll to see the entire document.

Second, the LTS30C is relatively inexpensive. It lists for just under \$1,000 (including an ATI Technologies Inc. Xpert II DVI digital graphics card), but you can find it for less than \$1,000 at many dealers, making it cost-competitive to high-end CRTs.

On the downside, the LTS30C doesn't display images with the same quality as the VPD180 or 1600SW (reviewed below), but was more than adequate. Six-point text was a near-invisible gray, but 8-point fonts were very black and readable. Colors were also a bit washed out compared with our other test displays, but not enough to be annoying.

The LTS30C is a good choice if you're looking for a pivoting LCD display that doesn't cost a bundle.

Digital Flat Panel Solution Pack

Number Nine Visual Technology/Silicon Graphics Inc.
www.nine.com
\$2,795

If you want to make other execs jealous, the Digital Flat Panel Solution Pack from Number Nine and Silicon Graphics Inc. (SGI) should do the trick.

The pack includes an SGI 1600SW flat-panel display and a Number Nine Revolutions IV-FP graphics card. Both boast exceptional features that add up to an outstanding display for professional users.

The 1600SW sports a futuristic look, with a gray-and-blue bezel and stand. But there's an even more striking physical feature: The display has a wide-screen format of 1,600 by 1,024 pixels. With a 17.3-in. diagonal measurement, it can display two full pages of test text side by side. Although it's not as clear with 8-point text as the VPDI80, the 1600SW produces sharp, black text that's extremely easy on the eyes.

The display really brings images to life. Of course, part of that quality comes from the graphics card. The Revolutions IV-FP comes with 32M bytes of RAM and a complete set of flat-panel control features, including color temperature (the relative levels of blue and red displayed), which wasn't offered on the ATI cards we used to test the other monitors.

At \$2,795 for the card and display, the Solution Pack setup looks like a bargain.

ViewPanel VPDI80

ViewSonic Corp.
www.viewsonic.com
\$3,995

Big — that's the first impression most people will have of the VPDI80. The 19.3-in. (measured diagonally) digital display shows off images as large as many 19-in. CRT monitors but, at 10-by-9.5-by-17.25 inches, takes up a fraction of the desk space. And at just over 13 pounds, it's still light enough to carry under one arm.

Viewers will be impressed by the display's image quality, too. At its ideal 1,280-by-1,024-pixel resolution, 8-point fonts were legible and 8-point fonts were readable. The monitor was quite bright, and colors were rich and well-saturated — though not as much as the 1600SW reviewed below.

Like most flat-panel displays, the VPDI80 can be removed from its tilt-swivel desktop stand to be attached to a wall or mounted on a swiveling arm or other vendor-specific holder.

The VPDI80's biggest drawback



The ViewPanel VPDI80 can save valuable desk space — and your eyeshift



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in its price. At nearly \$4,000 — without a graphics card — you won't be putting that display on many corporate desks.

But for special-purpose tasks that require extensive screen space without eye-fatiguing flicker or a big footprint, the VPDI80 might be a good alternative to 19- and 21-in. CRTs.

LTS30C

MagInnoVision Co.
www.maginnovation.com
\$1,299

Though neither as large nor as flashy as the other two displays we examined, the 15-in. LTS30C does have its advantages.

First, it's a pivoting display. Install the included driver software and you can rotate the screen 90 degrees for both landscape- and portrait-mode viewing. Portrait

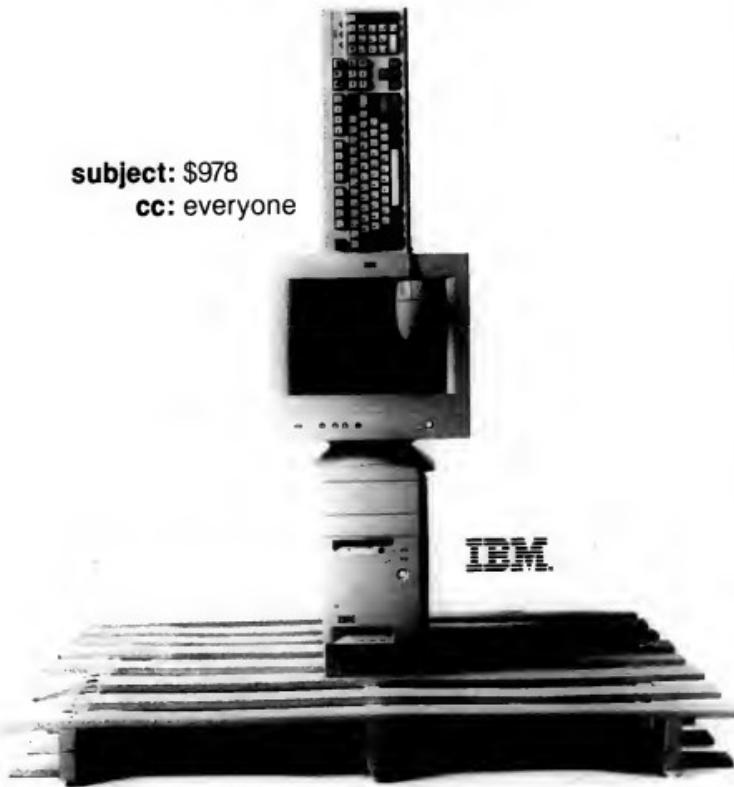
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*Estimated monthly price to end users for models 6200 GL and 6500 GL. Actual prices may vary. Certain features described below are available for an additional charge. Systems are available to credit qualified commercial users and local government customers via credit or a 24-month term. SuccessLease is offered and administered in the U.S. and Canada by Fidelity Leasing Inc., an approved provider of financing for IBM Global Financing. Monthly lease costs are provided by Fidelity Leasing and are for a 24-month term, full payout basis, to qualified business customers only. A documentation fee and first month payment due at lease signing. Any taxes are additional. Other terms and financing structures are available. Intel denotes Intel Processor internal clock speed; other factors may also affect application performance. gl=1 billion bytes for Hard Disk Drive capacity. PCs referenced in the ad include all operating systems. IBM product names are trademarks of International Business Machines Corporation. Intel and the Intel Inside logo are registered trademarks and Celeron is a trademark of Intel Corporation. ©1998 IBM Corp. All rights reserved.

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Technology Happenings

The Department of Defense

Research Projects Agency contracts the University of Illinois to build a parallel-processing computer, the ILLIAC IV.

■ U.S. manufacturers introduce handheld electronic calculators to the retail market. Texas Instruments Inc. unveils the first sold-in version, which has no electronic display. It prints answers on heat-sensitive paper.

■ Dr. Michael DeBakey becomes the first surgeon to successfully use an artificial heart pump. It is used at a left ventricular assist device.

■ The Federal Communications Commission launches its first computer inquiry.

In Space

■ January: An unnamed Soviet space probe lands on the moon and begins sending signals back to Earth.

■ March: The Soviet Union lands 1-ton spacecraft on Venus. The first orbital docking is performed during the flight of Gemini VIII.

■ June: The U.S. space probe Surveyor lands on the moon and begins transmitting detailed photographs.

■ November: The flight of Gemini XII ends successfully as astronauts James A. Lovell and Edward "Buzz" Aldrin splash down in the Atlantic Ocean.

Born in 1966

■ Albert Bell, Baltimore Orioles

■ Robert Morris Jr., U.S. computer scientist, who unleashed the Great Internet Worm in 1988

Other Notables

■ Peter Drucker releases a book on leadership in organizations, *The Effective Executive*.

■ Best Picture: *A Man for All Seasons*

■ China's Cultural Revolution begins.

■ The first *Star Trek* episode, "The Man Trap," is broadcast.

Robert C. Weaver becomes the first Black Cabinet member. President Lyndon B. Johnson appoints him Secretary of Housing and Urban Development.

— neither Bob Grimm nor Roy Clay nor any of the other folks on the team that engineered Compaq's first foray into the computer market in 1966 would have believed it if someone had said that HP's instruments business would one day be computing's weaker sibling.

"I don't think anyone at that time dreamed that the computer business would take over. Not even Bill Hewlett or Dave Packard," says Bob Grimm, who in 1966 was general manager of HP's Dynac division.

"They were very frightened.

But the idea that we would split the company some day and the HP name would go with the computer business would have been laughed at."

Debuting in November 1966, the 210A was designed to automate the collection and processing of data from the company's test and measurement devices. Without realizing it, architect Kay Magleby and the team that developed the 210A ultimately altered HP's future when they decided to build a general-purpose computer that could be tied to myriad instruments via plug-in cards rather than creating a very device-specific machine.

The target customers for the 210A were HP's bread-and-butter engineers — the folks who had to measure, test and calibrate. They could hook HP's nuclear scalars, electro-ic thermometers, digital voltmeters, pressure transducers,

— anything that collected data — to the computer using the cards, which featured only a cable, the connectors and the hardware interface. The data collected could then be manipulated and compared with data collected earlier, via the software; the results were printed to magnetic or punched tape or to a Teletype machine.

The plug-and-play ease with which customers could connect their existing instruments

to the 210A was a key marketing point — and also the feature that changed HP's destiny.

"The idea of having a small computer owned by a department was a radical concept," says Clay. "And in a lot of companies, if you wanted to buy a computer, you had to go through a hierarchy. You couldn't just sell it to the person with the problem like the instrumentation products."

And it was a hard sell internally, too. HP sales managers "were not at all excited about it. They didn't want to use any of their best field engineers on this new product," Grimm says. He managed to recruit four people, whom he put through six months of training on the 210A. They backed up the sales representatives and drove the 30-in.-high, 230-lb. computers around in station wagons to customer sites for demonstrations.

The 210A project was "radically different"

from other areas of HP. Its staff saw the potential applications of the 210A as more than just a back-end for instrumentation, says Clay, who led software development and is now president of ROD-L Electronics Inc. in Menlo Park, Calif.

Even though HP had no intention of selling the machine as a general-purpose computer, it was purchased by several companies, including Tymshare, as the basis for time-sharing systems. So when Holiday Inn came to HP seeking a fail-safe computer for a point-of-sale system, Clay's team tied two boxes together in a parallel-processing model. If one failed, the other would take over. Holiday Inn was

sold on the idea, but HP's senior managers were not; the system had nothing to do with the original purpose of the 210A. "Bill Hewlett called

me," Clay recalls, "and he said, 'Cancel the order and terminate the project.' And at 3 p.m., it was terminated."

HP wouldn't commit to the computer industry so a significant scale until 1975, when it introduced its HP-3000 series. More than 20 years later, in 1999, HP would reorganize to formally acknowledge the computer business as its core product line.

"The recent split is at least 180 degrees different from 1966," Clay says. □

Goff is a frequent contributor to Computerworld. Contact her at goff@jazz.net.com.

MORE ONLINE

For more on HP's 210A, visit our Web site: www.computerworld.com/more

HP's Radical Move

BY LESLIE BOFF

NEITHER BOB Grimm nor Roy Clay nor any of the other folks on the team that engineered Compaq's first foray into the computer market in 1966 would have believed it if someone had said that HP's instruments business would one day be computing's weaker sibling.

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The 210A project was "radically different"



◀ HP's 210A reshaped its maker's destiny

President Johnson signs a bill creating the Department of Transportation.

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U.S. bombers carry out their first strikes against North Vietnam. Two months later, the U.S. bombs fuel-storage facilities near the North Vietnamese cities of Hanoi and Haiphong.

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All Work Nets No Play

Evolving network technologies keep network professionals busy and put the squeeze on hiring managers

By Deborah Radcliff

TEDIOUS WORK, long hours and average pay. That pretty much sums up the job of a networking professional.

No wonder information technology shops can't find enough of them.

Networking, in fact, ranks as the most in-demand skill two years running, according to a March "Hot Jobs" report by the IT staffing and project consulting firm, RHL Consulting Inc., in Menlo Park, Calif.

Most in demand are highly skilled network engineers and designers, for which companies are willing to pay \$60,000 to \$100,000, plus bonuses and stock packages, depending on experience and size of the employer's network. Sound like great pay? Not when you consider the hours you have to work, Joseph W. Rowell says.

Computerworld interviewed Rowell and two other hiring managers to get the skinny on what they and their counterparts are looking for in networking professionals.

Q: What types of networking jobs are in highest demand?

PATTERSON: We need people who can design the network, configure and install routers, monitor the network and troubleshoot it.

ROWELL: What we really need are network designers and engineers. There isn't much demand for network managers. They just sit there and watch the network, which can be done with the help of network management programs. We outsource a lot of that.

Q: Why is there such demand for networking professionals?

ROWELL: You want it summed up? The big "I" — the Internet is driving the need for network designers. There's a push for all systems to be what I would call "technology aware" for sharing information from one network to the other.

PATTERSON: If other companies are like ours, they're probably in the process of changing their network from old to new technology and are in need of completely different skill sets.

Q: What skills are most needed?

CROSS: Those who know IP are the ones building the networks right now. It is also very important that networking professionals have a significant amount of security experience. The most critical would be firewall implementation and administration.

ROWELL: People in this profession must have strong background in TCP/IP, OSPF [Open Shortest Path First] routing methods and SNMP [Simple Network Management Protocol]. And a key factor in network design is to be able to determine when you need a shared network as opposed to a switched network. Another thing: People need to understand how to use network analyzers to troubleshoot.

Q: How much are you willing to pay for these skills?

CROSS: When we can find someone who is a professional and knows the job and can do it in less than half the time [it takes] a junior-level person, we recognize we have to pay a premium. Depending on the size of the networking project, a strong network designer or engineer could command \$150,000 as a contractor, which means no added benefits.

PATTERSON: Someone who's willing to jump in and dig out problems and learn new concepts and technologies needs to be rewarded. We can't pay as much as the larger companies in Tulsa, and we don't need someone with all the certifications worthy of six-figure salaries. But we are paying our network engineer in training \$60,000 a year.

Q: How much emphasis do you put on certification and formal education?

CROSS: If I've got someone with three years in building IP networks [but who is uncertified], that person would get the nod over someone who was certified a year ago. It would be good if an effort is made toward certification. But what I look for is training and number of years in a particular discipline.

ROWELL: Marketability is really based on job experience. While most employers would like to see at least a two-year degree, they're really looking for network engineers who've designed complex, enterprise,

The Panelists

Conrad Cross, director of technology at Applied Digital Communications in Orlando, Fla., runs the burgeoning market for networking services, so he helped start a networking services firm.

Pat Patterson, vice president of information systems at Mezzio's Corp. in Tulsa, Okla. He oversees a call center pizza ordering/delivery network for a 100-restaurant chain. He has moved the network from leased-line services to Integrated Services Digital Network, frame-relay and virtual private network technology.

Joseph W. Rowell, technical services manager at Ivescape Shipping Services in Mobile, Ala. He redesigned his firm's network from SNA to a frame-relay, TCP/IP network to support new accounting, collection, customer service and logistics programs.

worldwide networks. The engineer with this experience will blow away someone with 10 years' experience on a small network.

Q: How willing are you to offer certification and further train your networking professionals?

PATTERSON: If we can fill positions from within and train someone, we take that approach because that person is a known quantity.

Q: Is networking really the grueling, sleepless work it's been portrayed as?

ROWELL: It's no joke. It's very time-consuming, tedious and, at times, stressful. And it's not a nine-to-five job. Networking is not a profession to get into if you do not love what you're doing.

Q: Once networking professionals reach the levels of engineering and design, where do they move from there?

CROSS: Most designers and engineers don't want to move up the corporate ladder ... Networking is a technology they get their high from. But if they do go into management for the perks, their next step would be director of technology or something like that. ▀

Radcliff is a freelance writer in Santa Rosa, Calif. Contact her at derad@asol.com.

Out for Networkers

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IT CAREERS

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- Six years with design, development & maintenance of systems
- Experience in understanding IT's role in the overall success of the business

Lead Systems Technician (Memphis, TN)

- Six years with design, development & maintenance of systems
- Five years of programming experience (preferably w/ at least two years ABAP)
- Three years SAP functional knowledge

Database Administrator (Memphis, TN)

- Three to five years of database exp with either admin or application programming
- One year of UNIX and Oracle experience

Project Leader (Memphis, TN)

- Eight years with design, development & maintenance of systems
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- Two years System Analysis experience
- Three years total programming experience

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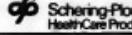
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IT CAREERS

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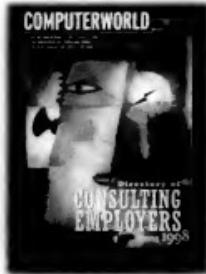
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The Recruiter's Role in Retaining Talent

BARBARA MITCHELL, THE MILLENNIUM GROUP



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FRANK CUTITTA, INTERNATIONAL DATA GROUP



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I.T. Retention Metrics Best Practices

DAVID WELDON, COMPUTERWORLD



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BRET HOLLANDER, NETRECRUITER



Using a P/L Approach to I.T. Recruiting

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Electronic Recruiting: Trends and Drivers

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Sequence Computer Systems	-15.0
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QUALCOMM'S HIGH-WIRE ACT

Wireless standard
sealed with Ericsson

THE JOURNAL OF CLIMATE

SAN DIEGO-BASED Qualcomm Inc. (Nasdaq:QCOM) is dazzling investors with its high-wire performance. The 14-year-old wireless communications company recently struck a deal with a competitor on a wireless standard — and doubled its stock price.

Qualcomm developed the Code Division Multiple Access (CDMA) standard. CDMA was fought for years by Stockholm-based L.M. Ericsson Telefonaktiebolaget, which pushed a different European

But March 25, the companies signed an agreement that settled all disputes and committed them to a CDMA third-generation standard. Qualcomm also

sold Ericsson its terrestrial CDMA wireless infrastructure business and research plants in San Diego and Boulder, Colo., for \$164 million.

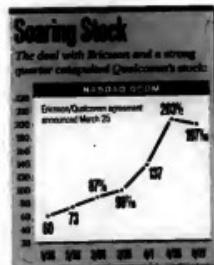
Moreover, Qualcomm notched record earnings in its most recent fiscal quarter. Revenue was 23% higher than for the same quarter last year: \$932 million compared with \$760 million. Since it signed the Ericsson agreement, Qualcomm's stock has jumped from the \$90 range to the \$200 neighborhood.

"It's tough to find fault with anything they've done, since they just finished a phenomenal quarter and signed a deal with Ericsson that's important for them and the future of the wireless industry," said Mark Cavallone, an analyst at S&P Equity Group in New York.

Cavallone and three other analysts rated Qualcomm a Buy or a Strong Buy.

The single CDMA third-generation standard, expected to be commercially available in 2000, will permit wireless data rates that range from 34.4K bps to 1.25M bps/sec., far above the current limit of 9.6K bps/sec., said Mark Roberts, an analyst at Everen Securities Inc. in San Francisco. Analysts expect Qualcomm to generate the bulk of its revenue from CDMA royalties and chipsets. New products such as the company's pQD line of smart phones (see sidebar, page 64) are expected to contribute relatively little income.

The only risk in the deal is that Ericsson will inherit several hundred Qualcomm workers but doesn't offer the same stock options as Qualcomm, said Wojtek Uzdelewicz, an analyst at S.G. Cowen & Co. in Boston. "It's a very different culture for the former Qualcomm employees, and that creates some risk," he says. ♦



2000-03 GP179

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FRANK HAYES/FRANKLY SPEAKING

Spread the word

BY NOW, YOU'VE probably already written your report on the Chernobyl virus for top management. You did write a report, right? If you didn't — why not? It's the worst computer-virus catastrophe in history. Your IT policies and investment in antivirus software likely saved your organization from a total shutdown and financial bloodbath. And if you're not taking credit for your part in the successful defense against Chernobyl, you shouldn't wonder that IT gets no respect among the business types in your organization.

If you don't tell them, they won't know. Your businesspeople probably heard doomsday warnings about Chernobyl — a.k.a. the CIH virus (see story, page 25) — before it hit and then a big collective yawn from the media the day after. *The Wall Street Journal* called Chernobyl a "dud" in a story buried deep inside the paper. CNN said it was "no big deal."

That's probably all your businesspeople and top managers know about Chernobyl.

But news reports from the rest of the world tell a different story. In mainland China, at least 100,000 PCs were infected by the virus. In South Korea, the toll was more than 250,000 machines, with damage estimated at upward of \$250 million.

In India, major industries, banks and publishing companies shut down last Monday to avoid damage. In Cairo, entire companies sent workers home because their systems crashed.

In Israel, Chernobyl hit a major financial institution and an intelligence organization. In Turkey, it took out an airport in Izmir, a military academy in Ankara, police departments, government offices, banks and the state-run radio and television station. In the Philippines, victims included companies in the telecommunications, banking, manufacturing, insurance and power generation industries.

Some dad, huh?

A conservative count puts the number of computers affected worldwide at about 700,000 — dwarfing the 100,000 PCs hit by the Melissa virus a month ago. And unlike Melissa, Chernobyl didn't just clog networks with nuisance e-mail. Chernobyl destroyed data. It ate motherboards alive. The total cost, including repairs,

lost data, lost time and lost business, should easily top \$1 billion.

That's the bullet your company dodged last Monday. And make no mistake, it's your IT shop that pulled the company out of that bullet's path — with antivirus tools, careful hardware control and tight policies for what software is allowed on your users' PCs.

Of course, your competitors across the street did a good job, too — few U.S. companies were hit. But your competitors around the globe didn't do so well. That's competitive advantage, thanks to IT.

We don't usually get that kind of chance to see how well we've done at using IT to avoid disaster. Usually, we can only guess about what might have happened.

But this time, we know. We can see it in workers sent home in Cairo and whole industries shut down in India. We've got hard evidence in the banks, manufacturers and government agencies shut down around the world.

That's real business benefit from IT. It's the ultimate return on investment: business as usual instead of catastrophe. But top management won't know unless you tell them. Remember, all they've heard is that this big Chernobyl virus turned out to be no big deal. They probably figure it's just another empty scare, another case of IT people crying wolf.

So write that report. Make sure your executives find out what happened to organizations that didn't make the necessary IT investments to protect themselves. And make sure your users know how bad it could have been — and, for some companies, how bad it was.

If you don't tell them, who will? *

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

DID I TELL YOU about the time I had two MiG-21s on my tail and had to punch out in a hurry, 8 miles above the Red Sea? Whoops, that wasn't me. That was Lotus-Jeff Papows. Whoops, it wasn't Papows either (see sidebar, page B). I tell you, pretty soon these vendor execs will be taking instructiveness lessons from politicians.

BEANS SPILLED: Starbuck's CEO and Chairman Howard Schultz said last week the coffee slinger is brewing up a "millions-of-dollars" cyber-commerce entry, due to hit the third quarter. Now that will be a grande issue. Or is it a vent?

FIRST, A 13-YEAR-OLD New Jersey kid bids \$31 million at the eBay auction site (he snagged a '91 Corvette for \$24,500 but couldn't pay for it). Now 16 disgruntled Silicon Valley employees are selling themselves at the site. Asking price: \$34 million for the group. But you don't get to see their resumes until after you pay up — they're afraid their boss will fire 'em if he finds out.

AT LEAST THE CREATOR OF THE CHERNOBYL VIRUS, originally called CH, seems like an honest guy. Reportedly, the prep was a Taiwanese student named Chen-ho Lin — and — you guessed it — the virus bears his initials. He's now in the Taiwanese military (Really?).

MORE PEOPLE-WATCHING: Remember Clive Sinclair, the eccentric Brit who made his wed from those cheap Timex-Sinclair home comput-

To dive in anybody who's been fudging, fibbing or fabricating, shoot anonymous e-mail to shark@computerworld.com.

The 5th Wave



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